United States Court of Appeals
for the
District of Columbia Circuit

TRANSCRIPT OF RECORD

BRIEF FOR APPELLANTS AND JOINT APPENDIX

176

IN THE

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT.

No. 10018

PAUL M. AMBROSE and CRIMORA RESEARCH AND DEVELOPMENT CORPORATION, *Appellants,*

v.

John A. Marzall ~~LAWRENCE C. KINGSLAND,~~ Commissioner of Patents,
Appellee.

Appeal from United States District Court for the District of Columbia.

United States Court of Appeals
for the District of Columbia
Circuit
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v.

LAWRENCE C. KINGSLAND, Commissioner of Patents, *Appellee.*

Appeal from United States District Court for the District of Columbia.

JURISDICTIONAL STATEMENT

The jurisdiction of the District Court of the United States for the District of Columbia was invoked under R. S. 4915, 35 United States Code Annotated, 63, as amended.

STATEMENT OF THE CASE

This is an appeal by plaintiffs below from a judgment of the District Court of the United States for the District of Columbia, entered June 21, 1948 (App. 10) dismissing the complaint as amended, filed herein March 27, 1947 (App. 2), demanding that the appellee (defendant, below), the Commissioner of Patents, be required to reissue the Ambrose patent No. 2,347,451, issued April 25, 1944, containing the three claims at bar based upon the Ambrose invention on the Electrodeposition of Manganese.

An application, Serial No. 568,310, for reissue of said patent (App. 29) was regularly filed by Paul M. Ambrose on December 15, 1944, and prosecuted before the Patent Office and the claims here in issue (App. 33) were finally rejected by the Examiner, and, upon appeal to the Board of Appeals of the Patent Office, the decision of the Examiner was affirmed on October 1, 1946 (App. 43). On petition for a re-hearing the Board of Appeals re-affirmed its decision on October 31, 1946 (App. 46).

As a result of the adverse decision of the Board of Appeals, appellants filed their complaint in the District Court of the United States for the District of Columbia.

Appellee, in his answer (App. 6), denied that plaintiff appellants were lawfully entitled to a reissue of said Ambrose patent containing the claims at bar on the ground of estoppel, alleging that Ambrose had cancelled similar claims 4 and 9 in his original application for said patent.

At the trial below, appellants took the testimony of one expert witness to explain the nature of the improvement covered by the claims at bar and to show how they distinguish from the two cancelled claims, 4 and 9, in the original application relied upon by appellee as constituting the alleged estoppel.

The Trial Court found, nevertheless (App. 8), that cancelled claims 4 and 9 in the original Ambrose application, when taken together, contained substantially the same subject matter as that sought in the claims at bar; that the abandonment of those claims constituted estoppel; and that it is of no importance that the subject matter of the claims sought in the reissue was not entirely contained in a single abandoned claim.

THE AMBROSE INVENTION

The invention described in the original application for the Ambrose patent sought to be reissued relates to the electrolytic recovery of manganese and has particular reference to the purification of an aqueous manganese electrolyte solution from which the pure metal is to be obtained. The essence of the process is the addition of a very small amount of material providing a sulphide ion to effect precipitation of traces of nickel and cobalt present in solution. The pH of this solution is maintained between 5.5 and 8.5 when the sulphide ion is added. The amount of the sulphide ion is just sufficient to remove the nickel and cobalt by first forming pink manganese sulphide and then permitting the solution to stand long enough for the pink sulphide to react with the nickel and cobalt and form a black precipitate containing all of the nickel and cobalt. The solution is filtered to remove the precipitate.

The reissue claims at bar, are in method form. Claim 19 is considered illustrative by all the parties and reads as follows:

> 19. That method of purifying an aqueous manganese sulphate-ammonium sulphate solution containing traces of nickel and cobalt, preparatory to electrolytic recovery of manganese from the purified solution, which is characterized by adding to the solution, at a pH between about 5.5 and about 8.5, sulphide ion in an amount not in excess of 1 percent of the stoichiometric equivalent of the manganese present and sufficient to remove the nickel and cobalt, to form pink manganese sulphide; reacting the pink sulphide with the nickel and cobalt compounds in the solution long enough for the pink sulphide to undergo a change and form a black precipitate containing substantially all of the nickel and cobalt; and then filtering the solution to remove said precipitate.

STATUTES INVOLVED.

Sec. 4915. R. S. (U. S. C., title 35, sec. 63.) Whenever a patent on application is refused by the Board of Appeals or whenever any applicant is dissatisfied with the decision of the board of interference examiners, the applicant, unless appeal has been taken to the United States Court of Customs and Patent Appeals, and such appeal is pending or has been decided, in which case no action may be brought under this section, may have remedy by bill in equity, if filed within six months after such refusal or decision; and the court having cognizance thereof, on notice to adverse parties and other due proceedings had, may adjudge that such applicant is entitled, according to law, to receive a patent for his invention, as specified in his claim or for any part thereof, as the facts in the case may appear. And such adjudication, if it be in favor of the right of the applicant, shall authorize the commissioner to issue such patent on the applicant filing in the Patent Office a copy of the adjudication and otherwise complying with the requirements of law. In all cases where there is no opposing party a copy of the bill shall be served on the commissioner; and all the expenses of the proceedings shall be paid by the applicant, whether the final decision is in his favor or not. In all suits brought hereunder where there are adverse parties the record in the Patent Office shall be admitted in whole or in part, on motion of either party, subject to such terms and conditions as to costs, expenses, and the further cross-examination of the witnesses as the court may impose, without prejudice, however, to the right of the parties to take further testimony. The testimony and exhibits, or parts thereof, of the record in the Patent Office when admitted shall have the same force and effect as if originally taken and produced in the suit. [As to interferences declared prior to Oct. 5, 1939, see Sec. 5 of Act of Aug. 5, 1939, printed after R. S. Sec. 4904, *ante*.]

Act of Mar. 3, 1927, 44 Stat. 1394 (U. S. C., title 35, sec. 72a):

And upon the filing of a bill in the District Court of the United States for the District of Columbia wherein remedy is sought under section 4915 or section 4918 of the Revised Statutes (U. S. C., title 35, sec. 63 or sec. 66), without seeking other remedy, if it shall appear that there is an adverse party residing in a foreign country, or adverse parties residing in a plurality of districts not embraced within the same State, the court shall have jurisdiction thereof and writs shall, unless the adverse party or parties voluntarily make appearance, be issued against all of the adverse parties with the force and effect and in the manner set forth in this section (sec. 113 of title 28 U. S. C.): *Provided,* That writs issued against parties residing in foreign countries pursuant to this section may be served by publication or otherwise as the court shall direct.

SEC. 4916. R. S. (U. S. C., title 35, sec 64.) Whenever any patent is wholly or partly inoperative or invalid, by reason of a defective or insufficient specification, or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new, if the error has arisen by inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, the commissioner shall, on the surrender of such patent and the payment of the duty required by law, cause a patent for the same invention, and in accordance with the corrected specification, to be reissued to the patentee or to his assigns or legal representatives, for the unexpired part of the term of the original patent. Such surrender shall take effect upon the issue of the reissued patent, but in so far as the claims of the original and reissued patents are identical, such surrender shall not affect any action then pending nor abate any cause of action then existing, and the reissued patent to the extent that its claims are identical with the original patent shall constitute a continuation thereof and have effect continuously from the date of the original patent. The commissioner may, in his discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for a reissue for each of such reissued letters patent. The specifications and claims in every such case shall be subject to revision and restriction in the same manner as original applications are. Every patent so reissued, together with the corrected specifications, shall have the same effect and operation in law, on the trial of all actions for causes thereafter arising, as if the same had been originally filed in such corrected form; but no new matter shall be introduced into the specification, nor in the case of a machine patent shall the model or drawings be amended, except each by the other; but when there is neither model nor drawing, amendments may be made upon proof satisfactory to the commissioner that such new matter or amendment was a part of the original invention, and was omitted from the specification by inadvertence, accident, or mistake, as aforesaid.

STATEMENT OF POINTS

Appellants base this appeal on the following errors:

1. That the Court below erred in its Finding 6, holding that abandoned claims 4 and 9 in the original Ambrose application, taken together, contained substantially the same subject matter as that sought in reissue claims 19, 20 and 21 at bar.

2. The Court erred in its finding 7 that: "The abandonment of claims 4 and 9 in the application which resulted in the Ambrose patent No. 2,347,451, which claims taken together, contained substantially the same subject matter as that sought in claims 19, 20 and 21 at bar, is conclusive that there was no inadvertence, accident or mistake, within the meaning of Section 4916 Revised Statutes.

3. The Court erred in its Finding 8, that: "Claims 19, 20 and 21 at bar, are unpatentable in an application for reissue."

4. The Court erred in its first Conclusion of Law that: "In considering the right of a reissue applicant to obtain claims for subject matter substantially the same as that of claims abandoned in his original application, it is of

no importance that the subject matter of the claims sought in the reissue was not entirely contained in a single abandoned claim, and that the subject matter abandoned was presented in more than one claim."

The Court erred in its second Conclusion of Law that:

"Plaintiffs are estopped to claim in a reissue application substantially the same subject matter as that of claims 4 and 9, abandoned in the original application."

The Court erred in its third Conclusion of law that: "Plaintiffs are not entitled to a reissue patent containing any of the claims set forth in the bill of complaint."

The Court erred in its fourth Conclusion of Law that: "The complaint should be dismissed as to all the claims."

The Court erred in not allowing any of the claims at bar.

SUMMARY OF ARGUMENT

Appellants contend that the two cancelled claims in the original Ambrose application do not contain substantially the same subject matter as that sought in the reissue claims at bar; that the reissue claims are patentably distinct from the cancelled claims; and that there is no legal basis for combining the two cancelled claims to constitute estoppel against the claims at bar.

It is submitted that the Trial Court erred in refusing to direct the Commissioner of Patents to reissue the Ambrose patent containing the claims at bar.

ARGUMENT

There are only two issues before the Court, viz:

1. Do cancelled claims 4 and 9 in the original Ambrose application, when taken together, contain substantially the same subject matter as that sought in claims 19, 20 and 21, at bar?

2. Is it permissible to combine the subjects matter of cancelled claims 4 and 9 in the original Ambrose applica-

tion to constitute estoppel against claims 19, 20 and 21, at bar?

The First Issue

Abandoned claims 4 and 9 in the original Ambrose application are reproduced in the appendix at page 57. They appeared in the original application, as filed (App. 47). Claim 4 embraced all of original claim 1.

The substance of claim 4, as it stood when it was cancelled, was:

1. The treatment of an aqueous solution of a soluble manganese salt by the addition of sulphide ion in an amount not substantially in excess of 1 percent of the stoichiometric equivalent of the manganese present in the solution to effect precipitation of heavy metal salts which may be present in the solution.

2. Allowing the solution to stand for a substantial period of time.

3. Filtering the solution.

The substance of cancelled claim 9 was:

1. The treatment of a manganese sulphate solution containing a substantial proportion of ammonium sulphate at a pH falling between 5.5 and 8.5 by the addition of sulphide ion in the solution to essentially precipitate pink manganese sulphide and other heavy metal sulphides.

2. Allowing the solution to stand for an appreciable period of time.

3. Filtering the solution to remove the precipitated sulphides.

The substance of reissue claim 19 is:

1. The solution to be treated consists of manganese and ammonium sulphates.

   (a) containing traces of nickel and cobalt, and
   (b) having a pH between about 5.5 and about 8.5

2. Adding to the solution sulphide ion in an amount not in excess of 1 percent of the stoichiometric equivalent of the manganese present in the solution and sufficient to remove the nickel and cobalt present.

(a) to form pink manganese sulphide.

3. Reacting the pink sulphide with the nickel and cobalt compounds long enough for the pink sulphide to undergo a change and form a black precipitate containing substantially all of the nickel and cobalt.

4. Filtering the solution to remove the precipitate.

Comparing cancelled claim 4 with reissue claim 19, it will be noted that the following essential limitations appearing in claim 19 are not included in claim 4:

1. A specification of the nature and amount of the heavy metals present in the solution. (Claim 19 calls for only traces of nickel and cobalt.)

2. Any critical range of pH of the solution which will promote or enable the reaction to take place. (Claim 19 sets forth the pH range as being between about 5.5 and about 8.5.)

3. Any criterion by which the standing time of the solution after the sulphide ion is introduced can be determined. (Claim 19 defines the standing time as being sufficient to permit the precipitated pink manganese sulphide to change its character and form a back precipitate containing substantially all of the nickel and cobalt.)

In the absence of such limitations in cancelled claim 4, which appellants submit are absolutely essential to the successful practice of the Ambrose method, that claim failed to set forth any practicable method. The claim is too indefinite to enable anyone to understand how to practice the method. In this connection, Dr. Dean testified (App. 22) "The method as expressed in claim 4 is completely lacking in the necessary definition of the amount and kind of impurities present and in the pH at which we operate; in the absence of those things being specified, the method could be carried out only by speculation or experiment, which would, in effect, develop the method anew." In answer to the question: "Does it express any method at all," he stated: "It does not express any method at all with the completeness which would permit you to follow it."

That claim 4 was incomplete and did not define the invention, was emphasized by the treatment accorded this claim by the Examiner during the prosecution of the application. In his first action on the claim, the Examiner rejected it as being indefinite and stated (App. 51): "The amount and kind of heavy metals present in the solution must be known before it can be concluded that the 1 percent will be sufficient to precipitate all the interfering metals."

Cancelled claim 9 lacks the following essential limitations which appear in reissue claim 19:

1. A specification of the nature and amount of the heavy metals present in the solution.

2. A limitation upon the amount of sulphide ion to be added.

3. Any criterion by which the standing time of the solution after the sulphide ion is introduced, can be determined.

Both cancelled claims 4 and 9 lack the above essential limitations numbered 1 and 3. Naturally, the same remarks apply to the shortcomings of claim 9 as to claim 4. Dr. Dean testified (App. 23) that claim 9 "is obviously not directed toward the essential steps of the process as set forth in the claim before the Court, to which we referred a moment ago." (reissue claim 19.)

As to the second absent limitation in claim 9, upon the amount of sulphide ion to be added, it is submitted that without this limitation the amount is left entirely to speculation or experimentation and the claim is incomplete without it. Dr. Dean testified to the effect that cancelled claim 9 indicates to him that enough sulphide ion is added to the solution to precipitate manganese sulphide and other heavy metal sulphides, all in a single step, and that the procedure prescribed in this claim is inconsistent with and differs from that prescribed in claim 4; that the appreciable period of standing time, as stated in claim 9 is meaningless; and that if a large quantity of sulphide ion is introduced into a solution having unspecified amounts of heavy metal impurities, the sulphides of manganese and those of heavy metal impurities would be precipitated simultaneously and the pink color would be only transient. (App. 22-25.) In this connection it is pointed out that the Examiner in his action of December 18, 1944, rejected claim 9 as well as claim 4, as being "unduly broad." (App. 53.)

Even if cancelled claim 9 is combined in any manner with cancelled claim 4, appellants submit that this will result in an indefinite and incomplete claim which could not have been allowed by the Patent Office. Such a claim would still fail to specify the nature and amount of the heavy metal impurities in the solution to be removed and the specification as to the amount of sulphide ion used would still remain meaningless. This was shown by the following testimony of Dr. Dean (App. 24-25):

> "Q. Is the 1 per cent stoichiometric equivalent recited in Claim 4 meaningless unless the amount of heavy metals present either in the form of nickel and cobalt or other heavy metals is specified?
>
> A. It certainly is.
>
> Q. Then I again refer you to the examiner's action stating:
>
> > "Claim 4, among others, are rejected as indefinite in referring to 1 per cent of the stoichiometric equivalent of the managenese present. The amount and kind of heavy metals present in the solution must be known before it can be concluded that the 1 per cent will be sufficient to precipitate all the interfering metals."
>
> I ask you if you agree with that criticism of those claims?

> A. I agree entirely with that.
>
> Q. Does that criticism apply to both claims 4 and 9 taken together?
>
> A. Definitely.
>
> Q. Do you find any specification of the amount and kind of heavy metals that are to be removed?
>
> A. Definitely not.
>
> Q. Is the claim meaningless without that?
>
> A. In my opinion it is meaningless without the specifications.
>
> Q. Do you say that even though they are piece worked together?
>
> A. That defect is not cured in any manner by putting them together because neither one contains any definition of it."

Likewise, the combined claims would lack any understandable specification of the amount of standing time necessary to permit a small amount of pink manganese to react with traces of nickel and cobalt and change its character by forming a black precipitate containing those metals. The statement that the standing time is "appreciable" (claim 9) or "substantial" (claim 4), is wholly indefinite and sheds no light on the proper standing time to accomplish applicant's result.

Appellants submit that claims 19, 20 and 21 at bar, which contain all of the essential limitations, some of which are absent in both claims 4 and 9 cancelled from the original application, would have been clearly allowable if they had been presented in the original application. And appellants further contend that the failure to submit such claims in the original application constituted such inadvertence, accident or mistake as would warrant the grant of a reissue.

It is a well recognized rule that claims which are patentably distinct from cancelled claims in an original application which matured into a patent, may properly be included in a reissue.

In *Moneyweight Scale Company* v. *Toledo Computing Scale Company,* 187 Fed. 826 C. C. A. 7, the Court said:

> "Of course, the acquiesence in the rejection of a combination of elements in general terms is not an abandonment of the combination of the same elements limited to specific construction and location, for in the specific construction and location may reside invention." (Page 830.)

The above case was cited with approval in *Robert* v. *Krementz,* 243 Fed. 877 (C. C. A. 3), in which Judge Wolley said:

> "It has been generally held that inability of solicitors for a patentee to put claims into a form that covers the real invention constitutes a case of inadvertence authorizing a reissue, and in such case the abandonment of such claims on their rejection by the Patent Office is not an abandonment of the invention and does not preclude a reissue and the substitution of claims which properly cover it." (Pages 881-2.)

The Second Issue

Referring to the second issue; viz, as to whether it is proper to combine two abandoned claims (4 and 9) in the original application to constitute estoppel against the claims at bar, appellants contend that, even if it be assumed that the subject matter of cancelled claims 4 and 9, when combined, is substantially the same as that of the reissue claims at bar, the doctrine of estoppel should not be so broadly construed. The Examiner, in his Statement on Appeal (App. 41) admitted that:

> "No prior adjudication on all fours with the instant case has been developed by the Examiner. Nor has counsel cited any case which supports his contention."

Appellants admit that they have been unable to find any clear-cut case on this point; but appellants rely upon the decision in the *Moneyweight Scale Company case,* 187 Fed. 826, *supra,* and *Robert* v. *Krementz,* 243 Fed. 877 (C. C. A. 3), *supra,* as supporting their contention that the combining of abandoned claims is not justified. In the *Money-*

weight Scale Company case, the Court said, in sustaining a reissue patent, that:

> "We have examined each of the twenty-seven rejected claims and have failed to find one that would be adequate to secure a monopoly of the DeVilbliss computing scale that would cover 'the details of construction' in which the invention as an entirety resided."

Appellee relied upon a recent decision of the Court of Claims and Patent Appeals, *in re Gustavino,* 23 C. C. P. A. 1179, 83 Fed. (2d) 913. In that case the Court happened to refer to two cancelled claims and stated:

> "When appealed claim 6 and the other appealed claims are compared with concelled claims 7 and 10 and the language of each claim carefully studied, we think no differences of a material nature appear."

A study of that decision indicates that cancelled claim 10, when taken alone, furnished an adequate basis of estoppel, since it appears to contain the substance of the appealed claims and there is no clear statement to the effect that claims 7 and 10 were combined to constitute estoppel.

Appellee also called attention to a decision by this Court, *Denton* v. *Commissioner of Patents,* 12 App. D. C. 504. However, an analysis of that case indicates that the Court relied upon a single cancelled claim as constituting estoppel. In its decision, the Court quoted the exact language from a single claim in the following words:

> "garment having pockets in the lower portion thereof for the feet"

and said that this covers and includes a claim for a gown having pockets in the lower portion thereof for the feet. There was no attempt by the Court to combine limitations in the two claims quoted in that case.

Appellee also cited a recent case of the Seventh Circuit Court of Appeals, *Fiberjoint Corporation* v. *W. R. Meadows, Inc.,* 112 Fed. (2d) 322. Consideration of that case indicates that a reissue patent was involved in an infringement suit and the claims thereof were held invalid for anticipation by a prior patent, which was cited against the original application—not because of any alleged estoppel. While it is true that the Court compared the claims of the reissue patent in suit with cancelled claims in the original application for the patent, there is no indication that the Court even considered combining any cancelled claims to constitute estoppel.

As this Court is aware and appellee will no doubt admit, it has been a common custom among solicitors to file applications containing claims such as "A device (naming it) substantially as described" or "as shown and described." In all such cases, if a harsh ruling of estoppel is adopted, such applicants would be deprived of their rights to reissue patents. Appellants contend that the reissue statute should not be so strictly construed.

CONCLUSION

Appellants submit that reissue claims 19, 20 and 21 at bar are clearly patentable over cancelled claims 4 and 9 in the original Ambrose application and that, even though it should be held that the two cancelled claims in the original application contain, between them, substantially the same subject matter as the claims at bar, there is no legal basis for so combining such cancelled claims to constitute estoppel. Wherefore, appellants respectfully urge that the judgment of the trial court be reversed.

Respectfully submitted,

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APPENDIX

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v.

LAWRENCE C. KINGSLAND, Commissioner of Patents, *Appellee*.

Appeal from United States District Court for the District of Columbia.

JOINT APPENDIX.

Filed Mar 27 1947

IN THE UNITED STATES DISTRICT COURT FOR THE
DISTRICT OF COLUMBIA

No. 1325-47

PAUL M. AMBROSE and CRIMORA RESEARCH AND DEVELOPMENT CORPORATION, 60 E. 42nd St., New York 17 N. Y., *Plaintiffs,*

v.

CASPER W. OOMS, Commissioner of Patents, *Defendant.*

Bill of Complaint

The Plaintiffs state as follows:

1. This action arises under the Patent Laws of the United States, particularly, under Title 35, Section 43, of the United States Code, and referred to as "Revised Statutes, Section 4915".

2. Plaintiff, CRIMORA RESEARCH AND DEVELOPMENT CORPORATION, is a corporation of Virginia, having a place of business at 60 East 42nd Street, New York City, and brings this suit as Assignee of the invention and the original patent thereon, having acquired title through mesne assignments; and Plaintiff, PAUL M. AMBROSE, is a citizen of the United States, residing at College Park, in Montgomery County, Maryland, and complains as Applicant for the Reissue Patent.

3. The Defendant, CASPER W. OOMS, is the Commissioner of Patents of the United States, an official resident of the District of Columbia, and is sued as Commissioner of Patents of the United States.

4. Plaintiff, Paul M. Ambrose, duly filed an application for patent in the United States Patent Office, entitled "ELECTROLYTIC DEPOSITION OF MANGANESE", on May 31, 1939, which was given the Serial Number of 276,554, which application was filed and prosecuted in accordance with the laws of the United States and the Rules of the Patent

Office, and matured into U. S. Letters Patent No. 2,347,451, on April 25, 1944.

5. After discovering that said patent was inoperative and/or invalid for failure to claim the invention properly, on December 15, 1944, said Paul M. Ambrose duly filed an application for the reissue of said patent under Serial No. 568,310.

6. The said reissue application was filed and has been prosecuted in accordance with the Laws of the United States and the Rules of the Patent Office.

7. The said reissue application has been passed upon by the Primary Examiner, who allowed nine of the claims, but refused to allow the following claims:

19. That method of purifying an aqueous manganese sulphate-ammonium sulphate solution containing traces of nickel and cobalt, preparatory to electrolytic recovery of manganese from the purified solution, which is characterized by adding to the solution, at a pH between about 5.5 and about 8.5, sulphide ion in an amount not in excess of 1 percent of the stoichiometric equivalent of the manganese present and sufficient to remove the nickel and cobalt, to form pink manganese sulphide; reacting the pink sulphide with the nickel and cobalt compounds in the solution long enough for the pink sulphide to undergo a change and form a black precipitate containing substantially all of the nickel and cobalt and then filtering the solution to remove said precipitate.

20. The method, as set forth in claim 19, wherein the sulphide ion is provided by one of the group consisting of ammonium sulphide, hydrogen sulphide and barium sulphide.

21. The method, as set forth in claim 19, wherein the pH of the solution is maintained between 7 and 8.

30. In the process of producing electrolytic manganese by electrolysis of an aqueous solution of manganese sulfate containing a substantial proportion of ammonium sulfate, the steps which are characterized by adding sulfied ion to

the solution in an amount not in excess of 1% of the stoichiometric equivalent of the manganese present but sufficient to precipitate some pink manganese sulfide at a pH of 7-8; adjusting the pH of the solution to between 7 and 8, reacting the pink sulfide, so formed, with the constituents of the solution long enough for the pink sulfide to undergo a change to a precipitate containing any nickel and cobalt present; and then filtering and electrolyzing the solution.

8. The applicant appealed from the decision of the Primary Examiner to the Board of Appeals, who affirmed the rejection of the Primary Examiner in a decision dated October 1, 1946.

48 9. Applicant filed a Petition for Rehearing before the Board of Appeals, and the Board reaffirmed their previous decision on October 31, 1946.

10. The Commissioner of Patents, by the Board of Appeals, contends that cancelled Claims 4 and 9 in Applicant's original application collectively contain substantially the same subject matter as the aforesaid reissue claims and the cancellation of said original Claims 4 and 9 constituted estoppel against Applicant's right to make said reissue claims.

11. Plaintiffs disagree with the contentions of the Commissioner of Patents, and contend that the Commissioner acted without legal right or precedent in combining the subject matter of the aforesaid cancelled Claims 4 and 9 in such manner as to constitute estoppel against Applicant's right to the appealed reissue claims.

12. Plaintiffs further contend that the subject matter of the aforesaid reissue claims is not substantially the same as that recited in cancelled Claims 4 and 9 of the original application when considered either singly or collectively.

13. The Plaintiff, Paul M. Ambrose, further states that the said invention is new and useful, and was not known or used by others in this country before his invention thereof, and not patented or described in any printed publication in this or any foreign country before his invention thereof

or more than two years prior to his original application for patent therefor, and not in public use or on sale in this country for more than two years prior to said application, and not patented in any foreign country by him or his legal representatives on an application filed more than twelve months prior to said application for United States letters patent and not abandoned.

14. Plaintiff, Paul M. Ambrose, further states that through inadvertence, accident, or mistake, his invention, as set forth in the aforesaid reissue claims, was never properly and adequately claimed in his original application;
that he fully complied with all of the requirements
49 of the Statutes of the United States and the Rules of
the Patent Office in connection with the filing of the said reissue application and prosecution of the aforesaid reissue claims; and that he is entitled to the benefits of the Reissue Statute, Section 4916, Revised Statutes.

Wherefore, the Plaintiffs pray that the Honorable Court decree that the Commissioner of Patents be directed to allow said reissue claims, and such other claims as upon hearing, the Court may find patentable.

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S. E. Bush,
Counsel for Plaintiffs.

* * * * * * * * * *

50 Filed Mar 31 1947

Amendment to Complaint

Now come the Plaintiff's, and, subject to the approval of this Honorable Court, amend the Complaint in the above entitled cause as follows:

After paragraph 9, insert the following paragraph:

9a. No appeal to the United States Court of Customs and Patent Appeals from said decision of the Patent Office Board of Appeals is pending or has been decided.

Adams & Bush,
1420 New York Ave., N. W.,
Washington, D. C.

A. D. Adams,
S. E. Bush,
Counsel for Plaintiffs.

* * * * * * * * * *

51 Filed Apr 30 1947

Answer to the Complaint, as Amended

To the Honorable the Justices of the District Court of the United States for the District of Columbia.

1. Defendant admits the allegations of paragraph 1.

2. He is without knowledge or information sufficient to form a belief as to the truth of the allegations concerning plaintiff Crimora Research and Development Corporation. He admits the allegations as to the citizenship and residence of plaintiff Paul M. Ambrose.

3, 4. He admits the allegations of paragraphs 3 and 4.

5. He admits that on December 15, 1944, plaintiff Paul M. Ambrose filed in the Patent Office an application for reissue of his patent No. 2,347,451, and that said reissue application was given Serial No. 568,310.

6. He admits that said reissue application was filed and has been prosecuted in accordance with the formal requirements of law and the Rules of the Patent Office.

52 7. He admits the allegations of paragraph 7.

8. He admits that on October 1, 1946, the Board of Appeals of the Patent Office affirmed the rejection by the primary examiner of claims 19, 20, 21 and 30 of said reissue application.

9, 9a, 10. He admits the allegations of paragraphs 9, 9a, and 10.

11, 12. He admits that plaintiffs disagree with the decision of the Board of Appeals and that plaintiffs make the contentions set out in paragraphs 11 and 12, but defendant denies such contentions for the reasons hereinafter given.

13. He admits that in said reissue application plaintiff Paul M. Ambrose made averments corresponding to the allegations of paragraph 13 but denies, for reasons hereinafter given, that said allegations are sufficient to justify reissuing the patent to contain claims 19, 20, 21 and 30, as set out in paragraph 7.

14. He denies the allegations of paragraph 14. He states that plaintiffs are not lawfully entitled to receive a reissue patent containing any of said claims 19, 20, 21 and 30 for the reason that plaintiffs are estopped to prosecute said claims as a consequence of the cancellation of similar claims 4 and 9 during the prosecution of the original application No. 276,554, as will more fully appear from the examiner's statement in answer to the appeal and the decision of the Board of Appeals, copies of which will be furnished at the trial. A copy of the patent to Paul M. Ambrose, No. 2,347,451 will be furnished at the trial.

W. W. Cochran,
Solicitor,
U. S. Patent Office,
Attorney for Defendant.

* * * * * * * * * *

54 Filed Oct 1 1947

Order

Upon consideration of the fact that Lawrence C. Kingsland succeeded to the office of Commissioner of Patents on September 10, 1947, in place of Casper W. Ooms who resigned, and it appearing that there is substantial need for continuing and maintaining the action, now therefore it is this 1st day of October, 1947

Ordered that Lawrence C. Kingsland, Commissioner of Patents, be and he is hereby substituted as party defendant in place of Casper W. Ooms, formerly Commissioner of Patents.

BOLITHA J. LAWS,
Chief Justice.

We Consent:

ADAMS & BUSH,
Counsel for Plaintiff.

W. W. COCHRAN,
Counsel for Defendant and for
Lawrence C. Kingsland, Commissioner of Patents.

* * * * * * * * * *

55 Filed Jun 15 1948

Informal Memorandum

Plaintiffs abandoned claims to substantially the same subject matter in the Patent Office as are here sought. Plaintiffs are estopped to claim such subject matter. It is of no importance that the subject matter abandoned was presented in more than one claim. The claims at bar are unpatentable to plaintiffs in an application for re-issue. The complaint will be dismissed.

Counsel for defendant will submit an appropriate order.

F. DICKINSON LETTS,
Justice.

* * * * * * * * * *

56 Filed Jun 22 1948

Findings of Fact

1. This is a civil action under Section 4915 Rev. Stat. (U. S. C., title 35, sec. 63), in which the plaintiffs, Paul M. Ambrose and Crimora Research and Development Corporation, seek to have this Court authorize the Commissioner of Patents to grant a reissue patent containing claims 19, 20, 21 and 30 of the Ambrose application, Serial No. 568,-310, for the re-issue of the Ambrose patent, No. 2,347,451, granted April 25, 1944, entitled "Electrolytic Deposition of Manganese."

2. Claim 30 was withdrawn by plaintiffs at the trial.

3. The application at bar describes a process of producing a high purity solution of a manganese salt from which pure manganese metal is precipitated electrolytically. The solution which usually contains small amounts of salts of heavy metals, particularly traces of nickel and cobalt, is purified by adding thereto a material providing a sulfide ion. The solution containing manganese sulfate and
57 ammonium sulfate is maintained at a pH range between 5.5 and 8.5, and the amount of sulfide ion provided is not in excess of 1 per cent of the stoichiometric equivalent of the manganese present. Upon the addition of the sulfide a pink manganese sulfide first forms, but upon standing for a substantial period of time the pink sulfide reacts with the traces of nickel and cobalt forming a black precipitate which contains all the metal impurities. Filtration is then resorted to to remove the black precipitate, and upon electrolysis pure manganese metal is produced. Further improved results are obtained particularly with respect to the time necessary for the pink sulfide to change to a black precipitate if there is also added to the solution a finely divided material presenting a large surface.

4. The description of the invention as set forth in the reissue application is identical with that of the patent, No. 2,347,451.

5. During the prosecution of the application which resulted in the Ambrose Patent No. 2,347,451, plaintiff abandoned claims 4 and 9 by cancelling these claims after their rejection by the examiner.

6. Abandoned claims 4 and 9, taken together, contained substantially the same subject matter as that sought in claims 19, 20 and 21 at bar.

7. The abandonment of claims 4 and 9 in the application which resulted in the Ambrose Patent No. 2,347,451, which claims taken together contained substantially the same subject matter as that sought in claims 19, 20 and 21 at bar, is conclusive that there was no inadvertence, acci-

58 dent or mistake within the meaning of Section 4916 Rev. Stat.

8. Claims 19, 20 and 21, at bar, are unpatentable in an application for reissue.

Conclusions of Law

1. In considering the right of a reissue applicant to obtain claims for subject matter substantially the same as that of claims abandoned in his original application, it is of no importance that the subject matter of the claims sought in the reissue was not entirely contained in a single abandoned claim, and that the subject matter abandoned was presented in more than one claim.

2. Plaintiffs are estopped to claim in a reissue application substantially the same subject matter as that of claims 4 and 9 abandoned in the original application.

3. Plaintiffs are not entitled to a reissue patent containing any of the claims set forth in the bill of complaint.

4. The complaint should be dismissed as to all the claims.

F. Dickinson Letts,
Justice.

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59 Filed Jun 22 1948

Judgment

This action came on to be heard at this term and thereupon consideration thereof, it is this 22nd day of June, 1948,

Adjudged that the complaint be and it is hereby dismissed, with costs against the plaintiff.

F. Dickinson Letts,
Justice.

Approved as to Form:
Adams & Bush,

Attorney for Plaintiffs.

By A. D. Adams.

• • • • • • • • • •

60 Filed Aug 17 1948

Notice of Appeal

Notice is hereby given that Paul M. Ambrose and Crimora Research and Development Corporation, plaintiffs above named, hereby appeal to the United States Court of Appeals for the District of Columbia from the final judgment entered in this action on June 21, 1948.

ADAMS AND BUSH.

ALVA D. ADAMS,
STONE E. BUSH,
Attorneys for Appellants,
Paul M. Ambrose and Crimora
Research and Development
Corporation,
1420 New York Ave. N. W.,
Washington-5, D. C.

August 17, 1948.

* * * * * * * * * *

Excerpt from Testimony of Reginald S. Dean

15 **Reginald S. Dean** was called as a witness and, being first duly sworn, was examined and testified as follows:

Direct examination

By Mr. Adams:

Q. State your name and occupation. A. My name is Reginald S. Dean. I am a metallurgical engineer and consultant.

Q. Will you give us a brief history of your educational qualifications and your experience? A. I am a graduate chemist and metallurgist. My education was re-
16 ceived at the Missouri School of Mines, the University of Chicago, Harvard University, University of Maryland. I have a Bachelor of Science degree, a Master's degree also. I am a metallurgical engineer and Doctor of Philosophy.

After graduation I held positions with various corporations in the capacity of research chemist and metallurgist. Those corporations included the American Zinc Lead and Smelting Company, the Anaconda Copper Mining Company, and the Western Electric Company. I joined the staff of the United States Bureau of Mines in 1929 as chief of their metallurgical division. I directed the metallurgical work of the Bureau of Mines for seventeen years, first as chief of the metallurgical division, and later as assistant director of that bureau.

During this period, the Bureau of Mines, under my direction, was extensively engaged in studying the metallurgy of manganese and developed the first successful method for the production of electrolytic manganese. I left the Bureau of Mines in 1946 to enter private practice as a metallurgical engineer consultant, and I have since been in such practice. My office is in Washington at 2041 K Street, Northwest.

In the course of such practice, I have continued to have an interest through several clients in the problems of the production of electrolytic manganese and related subjects.

Q. Have you published any pamphlets on man-
17 ganese in your experience? A. I have in the course
of my work with the Bureau of Mines published a
large number of technical papers in Government publica-
cations dealing with various aspects of electrolytic man-
ganese.

Q. Will you explain, briefly, if you know, what has been done in connection with recovery of electrolytic manganese in this country A. The Bureau of Mines developed, as I stated, the first successful method for the production of electrolytic manganese and based on the work done there, one commercial plant was built by the Electro Manganese Corporation in Knoxville, Tennessee, in 1940. That plant is still in operation and remains the single continued source of electrolytic manganese, although at least one other plant outside of the Bureau of Mines experimental plant was operated for some time.

Q. Have you had occasion to make a bibliography of manganese publications and patents? A. I have made, in the course of my work, a very extensive study of both patents and technical literature of electrolytic manganese.

Q. Was the Boulder City plant under your direct supervision? A. The Boulder City experimental plant was erected and carried out its work until September of 1946
under my general direction as chief of the metallurgi-
18 cal division, and later as assistant director of the
Bureau of Mines.

Q. Do you know what was done about purifying the manganese solutions up to 1939? A. The work up to 1939 on electrolytic manganese had been done by the Bureau of Mines, and largely by the group of workers located at Reno, Nevada. They were workers of the Bureau of Mines. They were under the immediate direction of Mr. S. M. Shelton. The method of purification which were used successfully at that time required the use of xanthates, usually in mixture of potassium ethyl xanthates and potassium amyl xanthates. All of the manganese produced up until the date mentioned was produced from solutions purified of nickel and cobalt by means of xanthates.

Q. What was the trouble with that method, if any? A. The objection to the xanthate method for purifying the solution is that it is necessary to add a substantial excess of these xanthates over the amount necessary to combine stoichiometrically with the nickel and cobalt and hence the xanthate remains in the solution. Such xanthate is inimical to the best results in the electrolytic deposition of manganese largely by virtue of the increase in sulphur content of that manganese which is caused by the xanthate.

Q. Are you acquainted with the method of purifying such
solutions alleged to have been invented by Mr. Am-
19 brose? A. I am.

Q. Have you had occasion to examine the file wrapper of his original patent application and the papers in his reissue application? A. I have examined them carefully.

Q. Are you familiar with the subject matter of the claims which he is seeking in the reissue application now before the Court? A. I am.

Q. Have you been consulted, technically, about this case? A. I have.

Q. Are you admitted to practice as a patent agent in the Patent Office? A. I am.

Q. Will you explain, first, in technical language and secondly in plain language, what you understand to be Mr. Ambrose's method? A. Yes. I understand the Ambrose method to be first a method for the removal from an electrolytic manganese solution, traces of nickel and cobalt. The method is such that some other heavy metals may be incidentally removed, but the basic essence of the Ambrose invention is to provide a procedure which will effectively
remove nickel and cobalt when present. The Am-
20 brose method consists of adding to the solution con-
taining nickel and/or traces of cobalt a small amount, 1 per cent of the manganese present or thereabout in order to precipitate first some pink manganese sulphide—this manganese sulphide then reacts with nickel and cobalt of the solution and forms in place of the pink precipitate a black precipitate which, if it is allowed to stand until completion by providing adequate time, this black precipitate contains all of the nickel and cobalt which then may be separated from the solution by filtration.

Q. What about the pH of that solution? You have not mentioned that. A. I am sorry. It is very important that the pH of that solution be between the limit of 5.5 and 8.5.

Q. The claims mentioned—

The Court: What is pH?

The Witness: The pH, Your Honor, is an arbitrary scale which has been adopted by chemists for defining what might be called the acidity of solution. Technically, the pH is defined as the logarithm of the reciprocal of the hydrogen ion concentration.

21 The Court: Does the "p" mean anything?

The Witness: The "p" stands for pressure. The partial pressure is the reason for using the term "p." However, it is merely an arbitrary scale in a sense which was arrived at by the chemist Sorensen for this reason: We recognize water, for example as dissociating to some extent into hydrogen ions and hydroxyl ions, that is H and OH. The number of hydrogen ions or the concentration of hydrogen ions in a liter of water is of course very, very small. As we add acid to it, that concentration of hydrogen ions becomes less. It would be much simpler from the standpoint of understanding if we expressed this in terms of hydrogen ion concentration instead of pH. If we did that though, we would have enormous numbers. The hydrogen ion concentration of water expressed in grams per liter is one in ten million, so you see we would get enormous numbers. This is merely a scheme which enables us to express the entire usable range of acidity and alkalinity from 1 to 15 instead of from 1 to 4 quadrillion. It is an arbitrary scheme. 22

A pH of 7 of water is neutral. A relatively strong water solution will have a pH of 14 or 15.

So you see, we have in this simply a scheme for expressing conveniently the acidity or alkalinity no matter how arrived at. The pH enables us to express the acidity of a solution in general terms.

Q. Will you explain what you mean by "traces of nickel and cobalt" in such a solution? A. The term "traces of nickel and cobalt" or the term "traces" is generally used in analytical chemistry to express the presence of an amount of material which is definitely detectable by qualitative tests, but which is at or below the limit for simple quantitative analysis. In general, we would say if manganese contained less than one-hundredth of one per cent, that the amount contained was a trace. That figure is not absolutely fixed, but there is, for all metals, a general range and it is easily detectable. In general practice, laboratories report a material present as a trace.

Q. Do you understand this method to be limited to purification of solutions containing only traces? A. The Ambrose method is limited to solutions containing only traces of nickel and cobalt.

Q. Then, does the solution have to be determined to con-
tain only traces before the method can be practiced
23 successfully as defined in the specifications? A. That
is correct. If it contains substantial amounts of
nickel and cobalt, experimentation would be necessary in
order to determine both the amount and the efficacy of the
sulphide ion.

Q. Is the amount of sulphide ion necessary to remove only traces predictable? A. No. It is not predictable on the basis of general chemical theory, nor is the information contained in the specification of this patent, or for that matter in any literature with which I am familiar.

Q. Do you understand that the Ambrose method was the first to propose the method of removing only traces of nickel and cobalt using a sulphide ion? A. That is my understanding.

Q. Had another method been employed wherein all of the manganese of the solution has precipitated along with the impurities and then extracted— A. No, such a method had never been employed for the purification because it would not be practical as an analytical method. Qualitative, the precipitation of that entire group of metals, cobalt, nickel and manganese, had been practiced; that is, enough sulphide ion was added to precipitate them all. Then the manganese was dissolved by the addition of acid. That
could not be practically applied to the purification.

24 Q. What have you to say about the criticality, if
any, of the pH alleged to be between 5.5 and 8.5 as
contained in the claim before this Court? A. Those pH
limits represent the outside limits for obtaining good results by this method. If the pH is substantially below 5.5, pink manganese sulphide will not be precipitated regardless of the amount of sulphide ion that is added. Above

8.5, difficulties will be met. Those two figures represent the outer limits of good results.

Q. Above a pH of 8.5, the solution is unstable; is that correct? A. That is correct. It is very readily oxidized and tends to precipitate a hydrated manganic oxide.

Q. Can that sort of solution be electrolyzed very well? A. No. The limitation of the presently accepted method for making electrolytic manganese requires that the pH not rise substantially above pH 8.5.

Q. Will you explain what is meant by that word "stoichiometric" in the claim? A. "Stroichiometric equivalent" is really a long word for a very simple thing. Elements combine in fixed proportions. For example, manganese and sulphur combine in a definite fixed proportion. That proportion is not weight for weight. 55 pounds of manganese combines with 32 pounds of sulphur, those being the atomic weights of the two elements. When we speak of the stoichiometric equivalent of a certain amount of manganese in the form of sulphur ion, we mean a weight of sulphur ion which will combine with a unit weight of manganese.

Q. What have you to say about the criticality, if any, of the 1 per cent of the stoichiometric equivalent of the manganese present as used in the claims before the Court? A. Well, the amount of sulphide ion added in the absence of substantial amounts of impurities is reflected in the amount of pink manganese sulphide which is precipitated in the initial step. The amount of pink manganese sulphide which is precipitated has a controlling effect on the completeness of removal of nickel and cobalt from the solution by its reaction with that solution.

The Ambrose method teaches us that 1 per cent of the stoichiometric equivalent of the manganese present will provide adequate pink manganese sulphide to remove by reaction with the solution, traces of the nickel and cobalt. So the amount of sulphide ion is critical only in the sense that it must be added in a sufficient amount to provide pink manganese sulphide to react with the cobalt and nickel that produce this insoluble precipitate. That is not a predictable stoichiometric ratio. We know that 1 per cent will be adequate for traces of nickel.

Q. Have you tried that in your laboratory? A.
26 Yes. I have tried the Ambrose method in all of its
aspects many times.

Q. What more than 1 per cent of the stoichiometric equivalent is added in the form of sulphide ion? A. The more sulphide ion that is added under the conditions of the pH set out, the more manganese sulphide that will be precipitated. Of course, we will very soon reach a serious practical objection to increasing the sulphide ion concentration because the purpose of this method is to purify a manganese solution; and the more manganese that is removed from it, the less economical and the less practical the method becomes, reaching in the end, the completely impractical solution of having precipitated all of the manganese.

The method does not teach us what would happen directly if substantially larger quantities than 1 per cent were added because that does not come within the purview of the method.

Q. I refer to a method by the examiner in his paper number 2, dated November 17, 1939. It is contained in Exhibit 1.

"The amount and kind of heavy metals present in the solution must be known before it can be concluded that the 1 per cent will be sufficient to precipitate all the interfering metals."

Do you agree with that? A. That is unquestionably true.

27 Q. Do you assert, now, that it is extremely important to relate the percentage of the sulphide ion to the amount of nickel and cobalt present? A. Yes, not only to the amount of nickel and cobalt, but to the amount of any other heavy metal impurities.

Q. What if there were others like molybdenum? What would happen? A. It depends, naturally, on both their nature and amount. Molybdenum is very incompletely precipitated by the sulphide ion. So if it were in the solution in substantial amounts, it would not be purified by this method. It is not applicable to the removal of the heavy metal molybdenum. Zinc would be removed, but the amount of sulphide ion necessary for the removal of zinc would be greatly increased thereby.

Q. What have you to say about the criticality, if any, of the standing time? A. Well, the standing time of the solution necessary to bring about the reaction between the pink manganese sulphide first precipitated and traces of nickel and cobalt in the solution depends, among other things, on the presence or absence of a finely divided solid in the solution. But in the absence of finely divided solids, the standing time can be determined by the change of character of the pink precipitate to a black precipitate.

28 Q. Is that essential before the solution is precipitated? A. That is essential if the precipitate has not changed from pink to black; the nickel and cobalt in the solution will not have been removed.

Q. If too much sulphide ion is added, can you detect the change from pink to black? A. Unquestionably, with the addition of sulphide ion; the nickel and cobalt would be at least in part simultaneously precipitated with the manganese so that the precipitate at the outset would be black, and it would be impossible to determine by further observation whether the reaction had gone to completion.

Q. Then, standing time is not measured solely in hours or minutes, is it? A. No. Standing time is measured by the length of time necessary for the pink manganese sulphide to react with the nickel and cobalt in the solution, and that reaction is indicated by a color change.

Q. Is it a fact that sulphide ion would immediately precipitate nickel and cobalt along with manganese as a sulphide? A. If sufficient sulphide ion is added, it will precipitate most of the nickel and cobalt and all of the manganese, yes.

29 Q. Are they precipitated separately as nickel and cobalt sulphides? A. Under those conditions, it is my opinion they are.

Q. But if 1 per cent of the stoichiometric equivalent of the manganese present is introduced as sulphide, would that happen? A. No. The tests have very clearly shown that if the pink manganese sulphide is first formed, and that is allowed to react with the solution, the black precipitate that you get, does not contain, as determined by examination with the x-ray spectograph, separate particles of nickel and cobalt sulphides. It is a complex sulphide of some form containing manganese, nickel, cobalt and sulphur.

Q. Then do you conclude that it is necessary that the manganese sulphide be first formed to react with the nickel and cobalt present before this method can be practiced successfully? A. That is the essence of the Ambrose method.

Q. I hand you a copy of Claim 19 in the reissue application before this Court and I ask you if, in your opinion, that claim represents the Ambrose procedure as you understand it? A. In my opinion, that is a clear statement of the Ambrose method.

Q. Will you refer to the limitations in that claim
30 which you consider to be indispensable in connection
with the practice of the Ambrose method as you
understand it? A. Well, in the first place, the Ambrose method is limited to the removal of traces of nickel and cobalt. Other methods are available for removing other materials or for larger amounts of nickel and cobalt. This claim, therefore, properly limits the procedure to the treatment of solutions containing traces of nickel and cobalt.

Q. Do they have to be determined in advance before the method can be practiced ? A. Yes. They should be determined by a qualitative test which would reveal their presence and that their amount might not be beyond what might be properly considered a trace.

Q. Proceed. A. This claim also defines as it must define to limit the method, the pH as between 5.5 and 8.5. It further specifies the sulphide ion to be sufficient to remove the nickel and cobalt, but not in excess of 1 per cent which is necessary.

Q. Not in excess of 1 per cent of one— A. Of the stoichiometric equivalent of the manganese present. It specifies them, as a—

Q. Just a moment. What is the importance of "but not in excess of the stoichiometric equivalent of the
31 manganese present"? A. There is the practical
consideration of the loss of manganese from the solution. There is also the practical consideration of not wanting to precipitate the nickel and cobalt as separate sulphides, but by wanting to precipitate by the combination first formed, thereby being able to follow the reaction and determine the time of standing by the color change in that reaction.

Q. That enables you to determine when the color change takes place with certainty? A. Yes, of course, the degree of blackness which is necessary is a matter which will have to be determined by some experience.

Q. Proceed. A. The claim is particularly important in specifying the separate steps of precipitating the pink sulphide and then reacting that pink sulphide with the nickel and cobalt compounds in the solution long enough for the pink sulphide to form a black precipitate containing substantially all of the nickel and cobalt.

Q. Is there a further step in that method? A. There is a further step of filtering to remove the precipitate which contains the nickel and cobalt. That is essential for obtaining a clear solution.

Q. What if the solution is filtered before the nickel and cobalt combine with the pink manganese sulphide?

32 A. It will not be purified from the last traces of nickel and cobalt.

Q. Please refer to claims 1, 4, and 9 in the original Ambrose application which resulted in his original patent and state whether or not those three claims taken together express the Ambrose method as you understand it? A. Well, first, Claim 4 and its parent Claim 1, contain no limitation of pH, and no definition of the nature and amount of impurities which it is supposed to remove. In the absence of such a specification, the amount of sulphide ion added cannot be significant in terms of its relationship to the manganese content. The desired precipitation of impurities will not take place over the entire pH range regardless of the amount of sulphide added. At a pH above 8.5, the solution itself becomes unstable, and further, there are heavy metals which will not be precipitated in that range. But even in the range of a pH where pink manganese sulphide is precipitated, the amount of sulphide to produce an effective result cannot be specificed solely in terms of a manganese content in the absence of any statement as to the nature or amount of impurities present. For example, if zinc were present then we would expect the sulphide ion to precipitate the zinc, and we would not obtain the pink manganese sulphide and consequently, we would not have the pink manganese sulphide to react with the cobalt and nickel.

33 Q. Just a moment, in your opinion, does that method as expressed in Claim 4 express any method at all that is practicable? A. The method as expressed in Claim 4 is completely lacking in the necessary definition of the amount and kind of impurities present, and in the pH at which we operate; in the absence of those things being specified, the method could be carried out only by speculation or experimentation which would, in effect, develop the method anew.

Q. Does it express any method at all? A. It does not express any method at all with the completeness which would permit you to follow it.

Q. Proceed with Claim 9 and add Claim 4, and see what is left. A. With regard to Claim 9, we find this claim properly specifies the pH limit. This claim, however, is obviously not directed toward the essential steps of the process as set forth in the claim before the Court to which we referred a moment ago. Neither the nature nor the amount of the impurities are specified. Consequently, it must be assumed that the amount of sulphide ion to be added, and the amount of sulphide ion is not specified in that claim, is shown in Claim 4 to rectify that omission. There we find simply that it must not be more than 1 per cent of the stoichiometric equivalent of the manganese. It does
34 not relate the amount of sulphide ion in either claims
9 or 4, or in their combination to the amount of impurities present. In Claim 9 we can only assume that the amount of sulphide ion to be added is sufficient to accomplish the stated result in Claim 9 which is the essential precipitation of pink manganese sulphide and other heavy metal sulphides.

If traces of nickel and cobalt are present in that solution, we must assume that this claim includes nickel and cobalt under the term "other heavy metal sulphides." There is no mention of them in Claim 9. They cannot be excluded, so they must fall under the heading of "other heavy metal sulphides."

Hence, the amount of metal sulphide ions would be an amount sufficient to precipitate some pink manganese and any incidental heavy metal sulphides such as zinc, but also the nickel and cobalt. The nickel and cobalt would then have been precipitated in this step, the first step, the pink sulphide would have become black in that step, and we would have no means and for that matter, no purpose, in a further step.

The fact that Claim 9 was really directed toward that sort of process is indicated by the time specified in Claim 9 which is not a substantial time of one hour or more. It is merely an appreciable time. It would therefore appear that

Claim 9, is directed toward a process wherein enough
35 sulphide ion was added to precipitate at one step the
nickel and cobalt along with whatever manganese sulphide was necessary, and that the process was not the Ambrose process, but some other process, wherein sufficient amounts of sulphide ion was added to precipitate the nickel and cobalt along with the manganese.

Frankly, I don't know the amount of sulphide ion which would do that, if any amount would do it; but the steps of Claim 9 are not the steps of the Ambrose method.

Q. Then, is Claim 9 inconsistent with Claim 4 in that particular? A. Claim 9 is inconsistent with Claim 4, yes, in the sense that Claim 4 specifies that the amount of sulphide ion added shall not be in excess of 1 per cent.

To carry out Claim 9 and bring about the result which Claim 9 states, would unquestionably require more than the amount of sulphide ion specified in Claim 4; so in that sense, it is inconsistent. The amount specified in Claim 4 would not accomplish the stated result in Claim 9.

Q. Is the 1 per cent stoichiometric equivalent recited in Claims 4 meangingless unless the amount of heavy metals present either in the form of nickel and cobalt or other heavy metals is specified A. It certainly is.

Q. Then I again refer you to the examiner's action
36 stating:

"Claim 4, among others, are rejected as indefinite in referring to 1 per cent of the stoichiometric equivalent of the manganese present. The amount and kind of heavy metals present in the solution must be known before it can be concluded that the 1 per cent will be sufficient to precipitate all the interfering metals."

I ask you if you agree with that criticism of those claims? A. I agree entirely with that.

Q. Does that criticism apply to both claims 4 and 9 taken together A. Definitely.

Q. Do you find any specification of the amount and kind of heavy metals that are to be removed A. Definitely not.

Q. Is the claim meaningless without that? A. In my opinion it is meaningless without the specifications.

Q. Do you say that even though they are piece worked together? A. That defect is not cured in any manner by putting them together because neither one contains any definition of it.

Q. Does it have any meaning without the specifi-
37 cation? A. It has no meaning behind the fact. It
has no meaning if you do not know what you are pro-
posing to remove.

Q. Did you read the claims of the original Ambrose patent allowed by the Board of Appeals? A. Yes.

Q. Did you find them to be inadequate for the same reason that you have discussed here in connection with Claims 4 and 9? A. That is correct. They are indefinite with respect to the impurities that are proposed to be removed. The term "heavy metals" is used. The term "heavy metals" encompasses some impurities which will not be removed, and others which would not be removed if present in substantial quantities.

Q. In your opinion, did the claims allowed in the patent really express the Ambrose patent? A. No.

The Court: We will suspend for a five-minute recess.

(Thereupon a five-minute recess was had. The following then occurred:)

Mr. Adams: Direct examination is closed, Your Honor.

Cross Examination

By Mr. Schimmel:

Q. Mr. Dean, you have read both the original Ambrose application and the reissue application? A. That is correct.

38 Q. You know their contents? A. That is right.

Q. Is there any difference between the descriptive portion of those two cases? A. No. There is no difference in the descriptions. There is no amendment.

Q. The specifications are identical? A. Yes.

Q. So the invention described in the reissue application is exactly the same as the invention described in the original patent? A. I understand that has to be the case in the reissue.

Q. The question is, is it or is it not? A. It is.

Q. Very well. You have a copy of Claim No. 9 before you. I would like to call your attention to Claim 9. That was cancelled from the original application? A. Yes.

Q. I call your attention, particularly, to the question of the step of adding sulphide ion whereby pink manganese sulphide and other heavy metal sulphides are essentially precipitated. As I understood your testimony, if more than the stoichiometric equivalent of manganese present were added as sulphide, both the manganese and the cobalt nickel present would precipitate immediately, and you
39 would get a black precipitate? A. That is true, at some point above 1 per cent.

Q. When the claim calls for the precipitation of pink manganese sulphide, would it mean anything to you that the precipitate has to be pink? A. It would mean that the precipitate, at some point, there would be pink.

Q. As a chemist, you would add enough sulphide ion to form a pink precipitate? A. I think the more sulphide ion I added, the less likely it would be pink.

Q. The claim says you want a pink color. That means you just add enough until you got a pink precipitate? A. No, because it says, "other heavy metal sulphides are precipitated."

Q. The only color you are asked about is pink. There is no other color? A. I see no basis for stopping there.

Q. Well, in normal precipitation reactions, when you are carrying out precipitations, and you are directed in an analytical qualitative or quantitative test to add enough to

get a certain color, that is all you do, is it not? A. I do not find that here. I do not find any statement that says add enough or add until. It merely says, "the pink sulphides
and other sulphides are precipitated." I found no
40 directions as to when to stop.

Q. In other words, you don't concede that the mere statement in there that you get a pink color means to stop when you get pink? A. Definitely not. The pink might well be a transient pink.

Q. But it would not be black? A. It might become black.

Q. It would not be black at that point? A. Not when it was pink, no.

Q. Then I also understood you to say that prior to the Ambrose invention, there were other methods available in the art for the removal of large amounts of nickel and cobalt? A. That is correct.

Q. As an expert in the field, are those methods acceptable? A. Attempts have been made to use them commercially. I refer, specifically, to the purification by means of finally dividing manganese which removes substantially all of the impurities. That method, as a matter of fact, was one which was being studied at the time of the Ambrose invention. It was found that while that method was effective for most heavy metal impurities, it was not effective for small amounts.

Q. But it was effective, and there were other methods,
were there not, for removing large quantities of
41 nickel and cobalt which might be present in the crude
manganese solution? A. That is correct.

The Court: You are not answering his questions.

The Witness: I am trying to.

By Mr. Schimmel:

Q. You could answer the question either yes or no if you wanted to. A. Yes. There are other methods.

Q. They are satisfactory to the eye A. Let me understand your question.

The Court: You moved around it.

By Mr. Schimmel:

Q. There are other methods for the removal of large amounts of nickel and cobalt from crude manganese electrolytes? A. They are not satisfactory in the sense that they completely remove it. They are satisfactory in the sense they remove the larger portion of the impurities.

Q. I did not ask you that. Are there satisfactory ways for removing nickel and cobalt present? A. That is correct.

Q. So the method described in the Ambrose application was unquestionably for traces of nickel and cobalt? A. That is correct.

Q. And would that be understood by one skilled in the art if he were reading that specification? A. I
42 think so.

Q. So that Claim 9 which is directed to the removal of the impurities by the use of the sulphide ion, would be for the removal of traces of nickel and cobalt? A. You could read that into it.

Q. Now to get back to Claim 9, there is also a step in the claim, following the precipitation of pink manganese sulphide which states that you should allow the solution to stand for an appreciable period of time. That expression standing alone, as I understood you to say, did not mean anything? A. That is right.

Q. "Appreciable" does not mean anything, but you essentially said that "substantial" might? A. I think there is a difference.

Q. There is a difference. As both an expert in the art and a patent agent, in interpreting that claim, would you not go back to the specification to find out what "appreciable" meant?

Mr. Adams: I object. This witness has not qualified as a patent expert. There is a technical difference between a patent agent and a patent lawyer. He is being asked to interpret a patent claim. I object.

Mr. Schimmel: He has been interpreting the claim all along.

43 The Court: Overruled.

A. I do not object to answering that at all. I would go back to the specification for the interpretation of the entire claim.

By Mr. Schimmel:

Q. I am asking about that specific portion of the claim. A. I would not go back to the specification for the interpretation of any specific portion separated from other portions.

Q. If we go back to the specification, what do you find in the specification with respect to the time stated? A. You find the expression "a substantial amount of time." You find that "substantial amount" is defined as less than an hour. My interpretation of the use of the word "appreciable" in this claim is that it is meant to be different from the term "substantial" which is defined in the specification.

Q. But you would not say "appreciable" there means "substantial"? A. No. My thinking is if he meant "substantial" he would have said it.

Mr. Schimmel: I believe that is all, Your Honor.

Mr. Adams: No cross examination, Your Honor. We rest our case.

* * * * * * * * * *

Plaintiffs' Exhibits

102 Dec 15 1944

568310

Application for Reissue Letters Patent

PETITION AND POWER OF ATTORNEY

To The Commissioner of Patents:

Your petitioner, Paul M. Ambrose, a citizen of the United States, residing at College Park, in the County of Prince Georges, and State of Maryland, whose post-office address is College Park, Maryland, prays that he may be allowed to surrender the Letters Patent for an improvement in

No. 2,347,451, granted to him April 25, 1944, whereof Chicago Development Company, on whose behalf and with whose assent this application is made, is record owner, by assignment, and that Letters Patent may be reissued to said Chicago Development Company, as assignee, for the same invention upon the annexed amended specification. With this petition is filed an abstract of title, duly certified, as required in such cases.

Your petitioner hereby appoints Alva D. Adams, of 1420 New York Ave. N. W., Washington 5, D. C., as his attorney, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the reissued Letters Patent, and to transact all business in the Patent Office in connection therewith.

Signed at College Park, County of Prince Georges, and State of Maryland, this 2 day of December, 1944.

Paul M. Ambrose

SPECIFICATION

To All Whom It May Concern:

Be it known that I, Paul M. Ambrose, a citizen of the United States, residing at College Park, County of Prince Georges, and State of Maryland, have invented new and useful improvements in

Electrolytic Deposition of Manganese

of which the following is a specification:

[Ambrose Patent No. 2,347,451 is omitted at this point since it appears *infra* under Defendant's Exhibits.]

105 10. That method of purifying an aqueous manganese solution, containing traces of heavy metal impurities, preparatory to electrolytic recovery of the manga-

nese, which comprises adding to the solution, at a pH between about 5.5 and about 8.5, sulphide ion in an amount sufficient to precipitate the heavy metal impurities but not substantially in excess of 1% of the stoichiometric equivalent of the manganese present; and stirring the solution to hasten precipitation of the heavy metal sulphides.

11. That method set forth in claim 10, wherein the sulphide ion is provided by one of the group consisting of ammonium sulphide, hydrogen sulphide and barium sulphide.

12. That method of purifying an aqueous manganese solution, containing traces of heavy metal impurities, preparatory to electrolytic recovery of the manganese, which comprises adding to the solution, at a pH between about 5.5 and about 8.5, sulphide ion in an amount sufficient to precipitate the heavy metal impurities but not substantially in excess of 1% of the stoichiometric equivalent of the manganese present; stirring the solution to hasten precipitation of the heavy metal impurities, and allowing the solution to stand for a time long enough to permit the precipitation of said metallic sulphides.

13. That method set forth in claim 12, wherein the sulphide ion is provided by one of the group consisting of ammonium sulphide, hydrogen sulphide and barium sulphide.

14. That method of purifying an aqueous manganese solution, containing traces of heavy metal impurities, preparatory to electrolytic recovery of the manganese, which comprises adding to the solution, at a pH between
106 about 5.5 and about 8.5, an inert, solid material having a high specific surface and sulphide ion in an amount sufficient to precipitate the heavy metal impurities but not substantially in excess of 1% of the stoichiometric equivalent of the manganese present; and stirring the solution to hasten precipitation of the heavy metal sulphides.

107 IN TESTIMONY, That I claim the foregoing as my own, I have hereunto affixed my signature.

PAUL M. AMBROSE

OATH

State of District
County of Columbia, ss:

Paul M. Ambrose, the above named petitioner, being duly sworn, deposes and says that he does verily believe himself to be the original, first and sole inventor of the improvement set forth and claimed in the foregoing specification and for which improvement he solicits a patent; that deponent does not know and does not believe that said improvement was ever known or used before his invention or discovery thereof, that deponent is a citizen of the United States of America, and resides at College Park, in the County of Prince Georges, and State of Maryland; that deponent verily believes that the Letters Patent referred to in the foregoing petition and specification and herewith surrendered are inoperative or invalid by reason of a defective or insufficient specification and/or failure to include claims fully commensurate with the scope of the invention; deponent further says that such defect or insufficiency consists, particularly, in the failure to present claims similar to or comparative in scope with the claims numbered 10, 11, 12, 13 and 14 in the foregoing specification; and that the errors, which render the patent so inoperative or invalid,
arose through inadvertence, accident and/or mistake,
108 and without any fraudulent or deceptive intention
on the part of deponent; that the following is a true specification of the errors which it is claimed constitute such inadvertence, accident and/or mistake relied upon; the failure to include the aforesaid claims, numbered 10, 11, 12, 13 and 14, in the specification of the aforesaid Letters Patent; that such errors, so particularly specified, arose as follows: deponent is not skilled in the preparation and prosecution of patent applications and in the drafting and interpretation of patent claims and, accordingly, he relied upon his attorneys to present claims fully commensurate with the scope of his invention and in the light of the prior

art; deponent believes that the attorneys were not fully aware of the scope of the claims to which he was and is entitled and failed to present claims, such as the aforesaid claims numbered 10, 11, 12, 13 and 14; deponent further states that, only recently, the inoperativeness of said patent and the possibility of a reissue were called to his attention and that he and his assignee proceeded promptly by authorizing this reissue application.

WHEREFORE, deponent prays that a reissue be granted to the end that his assignee shall not be penalized and suffer possible irreparable injury because of such inadvertence, accident and/or mistake.

PAUL M. AMBROSE

Subscribed and sworn to before me, a notary public, this 6th day of December, 1944.

CALVIN PIERSON,
Notary Public.

* * * * * * * * * *

Excerpts from Paper No. 9 Presenting New Claims

111 19. That method of purifying an aqueous manganese sulphate-ammonium sulphate solution containing traces of nickel and cobalt, preparatory to electrolytic recovery of manganese from the purified solution, which is characterized by adding to the solution, at a pH between about 5.5 and about 8.5, sulphide ion in an amount not in excess of 1 percent of the stoichiometric equivalent of the manganese present and sufficient to remove the nickel and cobalt, to form pink manganese sulphide; reacting the pink sulphide with the nickel and cobalt compounds in the solution long enough for the pink sulphide to undergo a change and form a black precipitate containing substantially all of the nickel and cobalt; and then filtering the solution to remove said precipitate.

112 20. The method, as set forth in claim 19, wherein the sulphide ion is provided by one of the group consisting of ammonium sulphide, hydrogen sulphide and barium sulphide.

21. The method, as set forth in claim 19, wherein the pH of the solution is maintained between 7 and 8.

22. That method of purifying an aqueous solution containing manganese sulphate and traces of nickel and cobalt, which is characterized by adding to the solution, at a pH between about 5.5 and about 8.5, sulphide ion in an amount at least sufficient to remove the nickel and cobalt and not substantially in excess of 1 per cent of the stoichiometric equivalent of the manganese present, to form pink manganese sulphide; also, adding to the solution an inert, solid material having a high specific surface; reacting the constituents of the solution long enough for the pink manganese sulphide to undergo a change and form a precipitate containing the nickel and cobalt; and then filtering the solution, preparatory to electrolysis.

23. The method, as defined in claim 22, wherein the inert, solid material comprises activated charcoal.

24. The method, as defined in claim 22, wherein the inert, solid material comprises finely divided, activated charcoal in an amount at least equal to the weight of the sulphide ion.

25. The method, as defined in claim 22, wherein the sulphide ion is selected from the group consisting of ammonium sulphide, hydrogen sulphide and barium sulphide and wherein the precipitating reaction is completed in a few minutes.

26. The method, as defined in claim 22, wherein the aqueous solution contains a substantial amount of ammonium sulphate.

113 27. The method, as defined in claim 22, wherein the aqueous solution contains at least 15 grams per liter of manganese, as manganese sulphate and at least 100 grams per liter of ammonium sulphate; and wherein the

sulphide ion is provided by adding ammonium sulphide; and wherein the reaction time is at least several minutes.

28. The method, as defined in claim 22, wherein the aqueous solution contains at least 15 grams per liter of manganese, as manganese sulphate, and at least 100 grams per liter of ammonium sulphate; and wherein the pH of the solution is maintained between about 7.0 and 8.0; and wherein the inert, solid material is activated charcoal.

29. The method, as defined in claim 22, wherein the sulphide ion is selected from the group consisting of hydrogen sulphide, ammonium sulphide and barium sulphide; and wherein the aqueous solution contains at least 15 grams per liter of manganese, as manganese sulphate, and at least 100 grams per liter of ammonium sulphate; and wherein the pH of the solution is maintained between 7.0 and 8.0; and wherein the inert, solid material is activated charcoal.

* * * * * * * * * *

121 Mail Division Nov 28 1945 U. S. Patent Office

IN THE UNITED STATES PATENT OFFICE

In re reissue application of:

Paul M. Ambrose
Ser. No. 568,310 Div. 56
Filed Dec. 15, 1944 Room 265
For Electrolytic Deposition of Manganese

Supplemental Reissue Affidavit

District of Columbia, ss.:

Paul M. Ambrose, being duly sworn, deposes and says, that he is the applicant named in the above application; that, in addition to the defects and insufficiencies in the original patent referred to in his reissue oath, he has just recently been informed that all of the claims of his original patent are indefinite and possibly invalid for undue breadth, in that they fail to prescribe a complete and operative method and that the principal defects are as follows:

Claims 1 and 2 fail to define the nature of the manganese salt, the character and amount of heavy metal impurities in the solution to be removed, and the amount of sulphide ion to be employed.

Claim 3 fails to cure the defects in claim 1 by merely specifying an amount of sulphide ion, relative to the manganese, without defining the amount and the nature of the particular heavy metal impurities to be removed.

122 Claims 4 and 5, likewise, fail to define the character and amount of heavy metal impurities in the solution or any relative amount of sulphide ion.

Claim 6 fails to state that the solution contains any impurities to be removed by the addition of ammonium sulphide and this claim is further defective because it is aggregative, in that it defines the use of an insoluble anode and a current density for electrolyzing the solution.

Claims 7, 8 and 9 fail to specify the character and amount of the heavy metal impurities present in the solution and any relative amount of sulphide ion to be added. Furthermore, claim 9 is aggregative, in that it includes the use of an insoluble anode and a current density for electrolyzing the solution.

Deponent further says that he has read claims 22 to 29 contained in the proposed amendment after final rejection, filed October 19, 1945, and that he believes that said claims properly express the patentable subject matter contained in the claims of his patent.

Deponent further says that the defects and insufficiencies in the claims of the patent occurred without his knowledge or consent; that the errors, which further render the patent inoperative or invalid, arose through inadvertence, accident and/or mistake and without fraudulent or deceptive intention on his part that such errors arose because he is not skilled in the preparation and prosecution of patent claims and he relied upon his attorneys to present claims properly covering the invention and that he now believes that his attorneys were not fully aware of the defects and insuffi-

ciencies in said patent claims at the time they were
123 presented.

Wherefore, deponent prays that the reissue be granted containing the claims presented in the aforesaid proposed amendment to the end that his assignee shall not be penalized and suffer possible irreparable injury because of such inadvertence, accident and/or mistake.

Paul M. Ambrose.

Subscribed and sworn to before me, this 27th day of November, 1945.

Calvin Pierson,
Notary Public.

* * * * * * * * * *

129 Mailed Jun 11 1946

Division 56
Room 7890
JS:LBH

Paper No. 15 DEPARTMENT TO COMMERCE
U. S. PATENT OFFICE
WASHINGTON, D. C.

In re application of

Paul M. Ambrose,
Serial No. 568,310,
Filed December 15, 1944,
For: Electrolytic Deposition
of Manganese

Examiner's Statement

This is the answer to an appeal from the final rejection of eight claims of this reissue application (numbered 10-13 inclusive and 15-18 inclusive) on the ground of estoppel and on the prior art. Claims 1-9 inclusive, corresponding to the original patent claims, and claim 14 were indicated as allowable. Subsequent to the final rejection, but prior to appeal, applicant presented an amendment (paper No. 9) canceling all the finally rejected claims and claims 1-9 inclusive, which were the original patent claims, substituting therefor claims 19-29 inclusive. This amendment was entered and applicant was advised that of these claims 22-29 inclusive were considered allowable, but that claims 19, 20 and 21 were considered to be unpatentable for the same reasons as those advanced against canceled claims 10-13 inclusive. And finally, with the appeal applicant presented two additional claims (paper No. 14) numbered 30 and 31, which amendment also has been entered. Of these, claim 30 is deemed unallowable, while claim 31 would be allowable if relieved of its dependence upon claim 30. Hence, this appeal is being forwarded upon claims 19, 20, 21 and 30. Claims 14, 22-29, inclusive, and 31 are considered to contain allowable subject matter.

130 The appealed claims are:

19. That method of purifying an aqueous manganese sulphate-ammonium sulphate solution containing traces of nickel and cobalt, preparatory to electrolytic recovery of manganese from the purified solution, which is characterized by adding to the solution, at a pH between about 5.5 and about 8.5, sulphate ion in an amount not in excess of 1 percent of the stoichiometric equivalent of the manganese present and sufficient to remove the nickel and cobalt, to form pink manganese sulphite; reacting the pink sulphide with the nickel and cobalt compounds in the solution long enough for the pink sulphide to undergo a change and form a black precipitate containing substantially all of the nickel and cobalt; and then filtering the solution to remove said precipitate.

20. The method, as set forth in claim 19, wherein the sulphide ion is provided by one of the group consisting of ammonium sulphide, hydrogen sulphide and barium sulphide.

21. The method, as set forth in claim 19, wherein the pH of the solution is maintained between 7 and 8.

30. In the process of producing electrolytic manganese by electrolysis of an aqueous solution of manganese sulfate containing a substantial proportion of ammonium sulfate, the steps which are characterized by adding sulfide ion to the solution in an amount not in excess of 1% of the stoichiometric equivalent of the manganese present but sufficient to precipitate some pink manganese sulfide at a pH of 7-8; adjusting the pH of the solution to between 7 and 8, reacting the pink sulfide, so formed, with the constituents of the solution long enough for the pink sulfide to undergo a change to a precipitate containing any nickel and cobalt present; and then filtering and electrolyzing the solution.

The invention relates to the production of manganese electrolytically, and is particularly concerned with the production of a high purity electrolyte which wll permit the attainment of a high purity electrolytic deposit. That result is stated to be obtained by the utilization of a novel method of purification of the manganese electrolyte coupled with proper control of the conditions of deposition. According to applicant's teaching, the principal step involved in the purification of the electrolyte is the addition of a material providing a sulfide ion to effect precipitation of the heavy metal impurities in the electrolyte. In addition, applicant insures removal of such precipitates by the
131 addition of inert materials of large surface area,
such as activitated charcoal, silica gel, or infusional earth. The sulfide addition and the material of large surface area are added together, and as a result of this purification procedure, electrolytic manganese of high purity is said to be produced in the electrolytic deposition step.

The sole reference relied upon is the patented file of applicant's patent 2,347,451 dated April 25, 1944.

All the appealed claims (19, 20, 21 and 30) were considered unallowable to applicant in this reissue application because of the cancellation from the parent application of claims containing substantially the same subject matter. The law is believed to be well settled that the deliberate cancellation of claims from an application for patent precludes their assertion in a reissue. In re Hernandez, 54 App. D. C. 404; 328 O. G. 255; 1924 C. D. 332; In re Lacroix, 30 App. D. C. 299; 133 O. G. 2181; 1908 C. D. 345. Applicant alleges that this general, well established rule does not apply to him, because no single canceled claim of the original application contains all the limitations of the presently involved claims.

Applicant's contention that no one claim canceled from the original application contained the subject matter of the appealed claims is freely admitted, but it is felt that canceled claims 4 and 9 contained between them substantially the same subject matter and, that having canceled those claims, applicant cannot recover that subject matter in the instant reissue application.

Comparing claim 19 with canceled claim 9 we find that both are concerned with the removal of metal impurities from manganese sulfate-ammonium sulfate electrolytes used in the electrolytic production of metallic manganese.
Both claims state also that the pH value of the solu-
132 tion lies between 5.5 and 8.5; both recite the addition
of a sulfide ion to precipitate pink manganese sulfide; and both include the step of filtering the solution to remove the precipitate formed. A slight difference in language occurs in appealed claim 19 in its definition of what occurs after the sulfide ion is added, which language, however, does no more than to explain what happens when "the solution is allowed to stand for an appreciable period of time", as set forth in canceled claim 9. The explanation incorporated in the presently involved claim is of no significance, since if one followed the teaching of the canceled claim, the result stated would necessarily flow. The only time that result might not flow would be when the sulfide ion is added in such excess that the color of the nickel and cobalt sulfides would be totally obscured by the pink manganese sulfide. That brings into consideration the only limitation in claim 19 not considered to be present in can-

celed claim 9—that is, the limitation on the amount of sulfide ion added.

However, it should be noted that canceled claim 4 contains essentially the same limitation upon the quantity of sulfide ion added, and although that claim is based upon canceled claim 1, it is believed that in so far as the subject matter is concerned applicant gave up that additional limitation in addition to all the other limitations of canceled claim 9 when those claims were canceled. The particular reasons behind the cancellation of the claims has been held to be immaterial. In re Hernandez supra. And it is the subject matter canceled, not the form thereof, which determines the estoppel.

133 No prior adjudication on all fours with the instant case has been developed by the examiner, nor has counsel cited any case which supports his contention. However, a recent decision of the Court of Customs and Patent Appeals published in 585 O. G. 177, is believed to be in point. In that case the sole issue presented involved the construction of the penultimate paragraph of Rule 94, the language of which is essentially the same as that usually used in expressing the rule of estoppel in reissue cases—namely, "... .asserting a claim which is the same as, or substantially the same subject matter as a claim. . . .". The contention raised in that case also was that an applicant was not entitled to copy a claim for interference unless the applicant was claiming in just one claim all the features which rendered the patent claim patentable. The Court rejected this contention, citing with approval the decision of the Board of Appeals that where the differences are in the forms of expression used and not differences in subject matter these should not be controlling.

That decision is believed to be sufficiently analagous to the instant case as to be determinative of the issue raised. The subject matter of the two canceled claims (4 and 9) is substantially and completely included in claim 19, and for that reason applicant is believed to be estopped to claim that subject matter in a reissue.

Claim 20 depends upon claim 19 and differs therefrom only in the recitation of a group of sulfides used as the source of the sulfide ion. Although no canceled claim contained this group expression, no real difference in subject matter is raised, since applicant teaches that any soluble sulfide ion is operative, and since no reason exists for the use of such group expression in this case.

134 Claim 21 also depends upon claim 19, differing therefrom only in a more limited pH range. Whether set forth as a pH range of 5.5 to 8.5 or as 7 to 8, the subject matter is believed to be substantially the same as that of the canceled claims, and hence estoppel lies.

Claim 30 is essentially like claim 21 and is believed to be unpatentable for the same reason.

Applicant has contended also that the appealed claims are intermediate in scope between the canceled claims and the patented claims. Even under such circumstances the claims are not necessarily allowable in a reissue. Ex parte Denton, 1898 C. D. 483.

For the reasons detailed herein, the final rejection of claims 19, 20, 21 and 30 is deemed to have been proper, and affirmance of that rejection is respectfully solicited.

Respectfully submitted,

S. Cockerill,
Examiner.

Alva D. Adams,
1420 New York Ave., N. W.,
Washington 5, D. C.

* * * * * * * * * *

135 Mailed Oct 1 1946

Decision

Paper No. 18
DB

Appeal No. 9,330

Hearing:
September 11, 1946

IN THE UNITED STATES PATENT OFFICE

BEFORE THE BOARD OF APPEALS

Ex parte Paul M. Ambrose

Application for Patent filed December 15, 1944, Serial No. 568,310 for the Reissue of Patent No. 2,347,451, granted April 25, 1944. Electrolytic Deposition of Manganese.
Mr. Alva D. Adams for appellant.

This is an appeal from the action of the Primary Examiner rejecting claims 19, 20, 21 and 30. Claims 14, 22 to 29 inclusive have been allowed.

Claim 19 is illustrative of the rejected claims and reads as follows:

> 19. That method of purifying an aqueous manganese sulphate-ammonium sulphate solution containing traces of nickel and cobalt, preparatory to electrolytic recovery of manganese from the purified solution, which is characterized by adding to the solution, at a pH between about 5.5 and about 8.5, sulphide ion in an amount not in excess of 1 percent of the stoichiometric equivalent of the manganese present and sufficient to remove the nickel and cobalt, to form pink manganese sulphide; reacting the pink sulphide with the nickel and cobalt compounds in the solution long enough for the pink sulphide to undergo a change and form a black precipitate containing substantially all of the
> 136 nickel and cobalt; and then filtering the solution to remove said precipitate.

The reference relied upon is the patented file of applicant's patent 2,347,451.

The application on appeal seeks reissue of the reference patent. The patent and the reissue application disclose the production of manganese electrolytically and the claims on appeal are directed to a method of producing a high purity electrolyte for the purpose of facilitating the attainment of high purity electrolytic deposit. The material to be purified is a solution of aqueous manganese sulphate-ammonium, sulphate, containing traces of nickel and cobalt. This solution at a pH of between 5.5 and 8.5 has added thereto sulphide ion in an amount specified in claim 19 to form pink manganese sulphide. The solution is permitted to stand so that the pink sulphide is reacted with the compounds which it is desired to remove. A black precipitate is formed containing any nickel or cobalt which may be present. The solution is then filtered to remove the precipitate.

Claims 19, 20, 21 and 30 stand rejected on the ground of estoppel. The Primary Examiner holds that these claims are not allowable in the reissue application because of the cancellation from the application which eventuated into patent 2,347,451 of claims 4 and 9 which he states contain substantially the same subject matter as that recited in the claims on appeal.

The Primary Examiner admits that no one claim canceled from the original application contains the subject matter of the appealed claims and for this reason, appellant contends that the Examiner is in error in rejecting claims 19, 20, 21 and 30.

137 We have compared claim 19, which is before us on appeal, with claim 9, which was cancelled from the application that eventuated into the original patent, and find that with the exception of the limitation of claim 19 as to the amount of the sulphide ion, every element and feature of claim 19 appears in claim 9 although possibly in slightly different terms or language. We do not think that the phrase "sufficient to remove the nickel and cobalt" or

the specification that the solution to be treated contains these materials differentiates claim 19 from claim 9. The limitation expressed by the quoted phrase which does not appear in canceled claim 9 appears in claim 4 which was canceled from the original application, this claim including in its terms the elements of claim 1 which was also canceled at the same time. Claim 1 was similar to canceled claim 9 although it did not include the features in respect to the pH value.

We agree with the position of the Primary Examiner that in cancelling claims 4 and 9 from the original application, applicant put himself in a position in which the estoppel applies and he is not entitled to receive the subject matter of those claims in the present reissue application. It is noted that all of the claims in the original application became limited by the cancellation of claims 1, 4 and 9 to a process including the step of adding activated charcoal or other finely divided inert material to the solution.

In support of our position we refer to In re Guastavino 472 O. G. 23, C.C.P.A. 1179, 83 F (2d) 913 in which the Court of Customs and Patent Appeals upheld the Patent Office in its rejection in a reissue application of claim 6 as
reproduced on page 533 of the decision because ap-
138 plicant canceled two claims from its original appli-
cation in which every limitation in the appealed
claim is inherent and is expressed in slightly different phraseology. In comparing claim 6 to claims 7 and 10, also reproduced on page 533 of the decision, it is found that neither one of these claims was a duplicate of the appealed claim but, as in the present appeal, some of the elements appeared in one of the abandoned claims and others in the other abandoned claim. The situation presented is exactly the same as in the present appeal.

The action of the Primary Examiner is affirmed.

In event of appeal attention is directed to In re Boyce, 32 CCPA 718; 144 Fed. (2d) 896; 1944 C. D. 609; 568 O. G. 568; 63 USPQ 80; in regard to specifically including in the appeal notice all grounds of rejection in the Examiner's Statement not expressly overruled by the Board.

C. H. Shaffer,
Examiner-in-Chief.
E. F. Klinge,
Examiner-in-Chief.
H. H. Jacobs,
Examiner-in-Chief.

Board of Appeals.

October 1, 1946

Mr. Alva D. Adams,
1420 New York Ave., N. W.,
Washington 5, D. C.

* * * * * * * * * *

146 Mailed Oct 31 1946 U. S. Patent Office of Appeals

Decision

Paper No. 20
DB

Appeal No. 9,330

IN THE UNITED STATES PATENT OFFICE

Before the Board of Appeals

Ex parte Paul M. Ambrose

Application for Patent filed December 15, 1944, Serial No. 568,310 for the Reissue of Patent No. 2,347,451, granted April 25, 1944. Electrolytic Deposition of Manganese. Mr. Alva D. Adams for appellant.

PETITION FOR RECONSIDERATION

Appellant criticizes claim 9, cancelled in the original application as "hopelessly indefinite, incomplete and inoperative" without the limitations now asserted in claim 19. It is noted, however, that claim 9 was not amended to make it definite or to include these limitations but that instead the subject matter of the claims on appeal was obviously abandoned by the cancellation of claims 4 and 9. We have reviewed our decision in view of all of the contentions in the petition and find no basis therein for altering or adding to the decision.

The petition has been considered but is denied in
147 respect to making any change in our decision.

C. H. SHAFFER,
Examiner-in-Chief.
E. F. KLINGE,
Examiner-in-Chief.
H. H. JACOBS,
Examiner-in-Chief.

Board of Appeals.

October 31, 1946

Mr. Alva D. Adams,
1420 New York Ave., N. W.,
Washington 5, D. C.

* * * * * * * * * *

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Excerpts from Original Ambrose Application, Serial No. 276,554 (Claims 1-12 as Originally Filed)

1. The method of making high purity manganese which comprises providing an aqueous solution of a soluble manganese salt, adding a sulphide ion thereto to effect precipitation of heavy metal salts which may be present, allowing the solution to stand for a substantial period of time, filtering, and electrolyzing the solution to obtain manganese.

2. The method of making high purity manganese which comprises providing an aqueous solution containing a soluble manganese salt, adding thereto a sulphide ion and an inert, solid material having a high specific surface, the sulphide ion being effective to precipitate such heavy metals as may be present, allowing the solution to stand for a short period of time, filtering, and electrolyzing to produce electrolytic manganese.

3. The method defined in Claim 2 wherein the inert, solid material comprises activated charcoal.

4. The method of Claim 1 wherein the sulphide ion is added in an amount not substantially in excess of 1% of the stoichiometric equivalent of the manganese present.

5. The method defined in Claim 2 wherein the inert, solid material is activated charcoal, the sulphide ion added is in an amount less than about 1% of the stoichiometric equivalent of the manganese present, the activated charcoal being employed in amounts at least equal to the weight of the added sulphide ion.

74 6. The process of producing electrolytic manganese which comprises providing an aqueous solution of manganese sulphate, adding a member selected from the group consisting of ammonium sulphide, hydrogen sulphide, and barium sulphide to precipitate such heavy metals as may be present, adding a finely divided inert material to the solution, allowing the solution to stand for at least about 10 minutes, filtering the solution, and electrolyzing the same to produce electrolytic manganese.

7. The process defined in Claim 6 wherein the aqeous solution of manganese sulphate contains a substantial content of ammonium sulphate.

8. The method of producing electrolytic manganese of high purity which comprises providing an aqueous solution containing at least 15 grams of manganese as manganese sulphate and at least 100 grams of ammonium sulphate per liter of solution, adding ammonium sulphide thereto in amounts not substantially in excess of 1% of the stoichiometric equivalent of the manganese present, adding a finely divided inert material to the solution, allowing the solution to stand for at least several minutes, filtering, and subjecting the resulting filtrate to electrolysis, utilizing an insoluble anode and an anode current density between about 16 and about 20 amperes per square foot.

9. In a method of producing electrolytic manganese by electrolysis of manganese sulphate solutions containing a

substantial proportion of ammonium sulphate, the pH of said solution falling between 5.5 and 8.5, the steps which comprise adding thereto a sulphide ion whereby pink manganese sulphide and other heavy metal sulphides are essentially precipitated, allowing the solution to stand for an appreciable period of time, and filtering to effect removal of the sulphides of the heavy metals which are present as impurities.

10. The process of producing electrolytic manganese by electrolysis of aqueous solutions of manganese sulphate containing substantial proportions of ammonium sulphate, which comprises adding a sulphide ion to said solutions at a pH between about 7.0 and 8.0, adding activated charcoal, allowing the solution to stand for an appreciable period of time, filtering to remove the precipitated sulphides of such heavy metal impurities which may be present, and electrolyzing the filtrate to produce electrolytic manganese.

11. The method of Claim 10 wherein the sulphide ion is incorporated through the addition of a member selected from the group consisting of hydrogen sulphide, ammonium sulphide, and barium sulphide.

12. The method of Claim 10 wherein the sulphide ion is incorporated through the medium of ammonium sulphide and the filtrate is electrolyzed utilizing an insoluble anode and an anode current density between about 16 amperes and about 20 amperes per square foot, the electrolysis being effected in a diaphragm cell and the manganese electrolyte being continuously circulated through the cathode compartment at such a rate that there is always present therein at least about 15 grams of manganese as manganese sulphate per liter.

* * * * * * * * * *

77 Mailed Nov 17 1939

Examiner's Action on Original Application

Div 56 Room 4725 Paper No. 2

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

Applicant: P. M. Ambrose

Ser. No. 276,554
Filed May 31, 1939
For Electrolytic Deposition of Manganese

McLaughlin & Wallenstein
757 Field Bldg.
Chicago, Illinois

This application has been examined.

The references are:

Publication, U. S. Bureau of Mines, Report of Investigation 3,406-July 1938-Page 8.

Book—"Analytical Chemistry"—Treadwell and Hall, 7th edition, Vol. II, page 165—Published by John Wiley & Sons, in New York in 1930. Copy in Div. 59.

Thwaites	1,069,205	Aug. 5, 1913	75-108
Tippins	1,993,761	Mar. 12, 1935	210-23

(1) Claims 1, 4 and 9 are rejected as unpatentable over the publication of Report of Investigations 3,406, especially page 8 thereof, wherein is disclosed the use of sulfide ion to remove Cu and Ni from a Mn electrolyte.

(2) Claims 1 to 12, inclusive, are rejected as unpatentable over the publication of Report of Investigations 3,406, in view of Thwaites. The precipitation of CuS and ZnS in the presence of $BaSO_4$, are inert material of high specific surface, is disclosed in Thwaites. To incorporate this expedient in the Mn recovery method reported in the Investigations 3,406, is not thought to require invention. That

activated carbon is known to assist coagulants is shown in Tippins.

(3) Claims 1 to 8, inclusive, are rejected as incomplete
in that they fail to recite the pH of the solution when
78 the sulfide ion is added. It is well known in analytical chemistry that the pH is critical in determining which metals precipitate as sulfides. Note, for example, page 165 of Volume 2 of Treadwell and Hall's "Analytical Chemistry", 7" edition, where Mn remains in the filtrate, and Co and Ni are thrown down as sulfides.

(4) Claims 4, 5 and 8 are rejected as indefinite in 1% of the stoichio-metric equivalent of the manganese present." The amount and kind of heavy metals present in the solution must be known before it can be concluded that the 1% will be sufficient to precipitate all the interfering metals.

(5) Claims 1 to 12, inclusive, are rejected as drawn to the old combination of purifying an electrolyte plus electrodeposition. This combination is shown in the publication of the Bureau of Mines.

(6) Claims 4, 5 and 8 do not appear to have basis in the specification, which does not mention the figure of 1% recited in these claims.

(7) No claim is allowed.

S. Cockerill,
Examiner.

* * * * * * * * * *

79 May 9 1940 U. S. Patent Office

Amendment

UNITED STATES PATENT OFFICE

Applicant: Paul M. Ambrose Div. 56, Room 4725
Application: Electrolytic Deposition of Manganese
Serial No. 276,554 Filed May 31, 1939

757 Field Building
Chicago, Illinois
May 7, 1940

Hon. Commissioner of Patents
Washington, D. C.

Sir:

In the above entitled application, responsive to the Official Action of November 17, 1939, kindly amend as follows:

Page 6, line 21, after "than" insert—or not substantially in excess of,—.

Claim 1, line 1, change "The" to—In a—. Line 2, change "providing" to—electrolyzing—. Line 3, after the comma (,) insert—the steps which comprise—. Same line, change "thereto" to—to said aqueous solution.— Line 6, after the first comma (,) insert—and—. Change the comma (,) after "filtering" to a period (.) and delete the remainder of the claim.

Claim 2, line 1, change "The" to—In a—. Line 2, change "providing" to—electrolyzing—. Line 3, after the comma (,) insert—the steps which comprise—. Same line, change "thereto" to—to said aqueous solution—. Line 7, after the first comma (,) insert—and—and change the comma (,) after "filtering" to a period (.) and delete the remainder of the claim.

80 Claim 6, line 1, change "The" to—In a—. Line 2, change "providing" to —electrolyzing—. Line 3, after the comma (,) insert—the steps which comprise—. Line 5, after "to" insert—said aqueous solution to—. Line

7, after the comma (,) insert—and then—. Line 8, change the comma (,) to a period (.) and delete the remainder of the claim.

Claim 8, line 1, change "The" to—In a—. Line 2, change "providing" to—electrolyzing—. Line 5, after "solution" insert—by utilizing an insoluble anode and an anode current density between about 16 and about 20 amperes per square foot—. Same line, change "thereto" to—to said aqueous solution—. Line 9, after the first comma (,) insert —and—and change the comma (,) after "filtering" to a period (.) and delete the remainder of the claim.

Claim 10, line 1, change "The" to—In a—. Line 4, after the comma (,) insert—the steps—and change "comprises" to—comprise—. Line 7, after the comma (,) insert—and—. Line 8, change the comma (,) to a period (.) and delete the remainder of the claim.

* * * * * * * * * *

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Excerpt from Examiner's Action of December 18, 1940

Claims 1 to 12, inclusive, are rejected as unduly broad and as based upon an inadequate and insufficient specification. Applicant's invention is concerned with the separation of nickel and cobalt from manganese in solutions in which the manganese content predominates. Ammonium sulfide and hydrogen sulfide are said to be used to precipitate the nickel and cobalt, the pH of the solution being anywhere between 5.5 and 8.5. The prior art, as evidenced by the Treadwell and Hall publication, teaches that hydrogen sulfide precipitates no nickel from solutions containing mineral acids or much acidic acid, and that ammonium sulfide precipitates nickel from neutral solutions, but forms colloidal solutions in the presence of ammonia. Applicant's specification is totally silent as to the details; only the broad concept or idea is set forth. Under such circumstances, it is believed that applicant's specification fails to set forth applicant's contribution to the art with that degree of particularity required by the Statutes, since in the light of the teaching of Treadwell and Hall, a sulfuric acid or hydrochloric acid solution (pH 5.5) would be inoperative with hydrogen sulfide or even ammonium sulfide. In the light of this prior art, it appears that if applicant's process operates, then the procedural details are not sufficiently disclosed.

* * * * * * * * * *

DEFENDANT'S EXHIBIT NO. 1

FILED
SEP 7 1948
HARRY M. HULL, Clerk

Patented Apr. 25, 1944 **2,347,451**

UNITED STATES PATENT OFFICE

2,347,451

ELECTROLYTIC DEPOSITION OF MANGANESE

Paul M. Ambrose, College Park, Md., assignor to Chicago Development Company, Chicago, Ill., a corporation of Illinois

No Drawing. Application May 31, 1939, Serial No. 276,554

9 Claims. (Cl. 204—105)

This invention relates to the electrolytic deposition of manganese and is particularly concerned with the production of very high purity electrolytic manganese from aqueous solutions of manganese salts, particularly, manganese, sulphate solutions.

The preparation of electrolytic manganese from electrolytes comprising aqueous solutions of manganese salts such as manganese sulphate, manganese chloride, manganese benzoate, manganese sodium citrate, manganese acetate and other manganese salts has heretofore been proposed. The aqueous electrolytes have been utilized as such or in conjunction with addition agents such as ammonium salts and ethanolamine salts, for example, ammonium sulphate, monoethanolamine sulphate, triethanolamine sulphate, and the like. In addition, the prior art suggested the preliminary purification of the aqueous manganese electrolytes by various methods. Despite all of these efforts to produce fully satisfactory depositions, no one has heretofore successfully produced satisfactorily thick deposits which are substantially free from sulphur. Thus, for example, while good deposits have been reported in connection with the process described in United States Patent No. 2,119,560, the sulphur content of the deposited manganese has ranged from about 0.2% to about 0.3%, representative deposits containing of the order of 0.27%.

The present invention is based upon new discoveries which enable the formation of exceptionally satisfactory deposits of manganese, of good thickness, and of substantial freedom from sulphur. In general, these results are obtained by the utilization of novel methods of purification of manganese electrolyte solutions coupled with proper control of current density and manganese content of the catholyte.

Aqueous catholyte solutions which are employed in the production of electrolytic manganese usually contain relatively large amounts of manganese salts and ammonium salts or salts of organic nitrogenous bases or the like, an illustrative example being of the order of 70 grams of manganese sulphate and 200 grams of ammonium sulphate per liter as major constituents. However, the electrolyte also usually contains small amounts of salts of one or more of the elements iron, nickel, cobalt, molybdenum, vanadium, arsenic, copper, zinc, and lead. These impurities seriously interfere with the production of satisfactory deposits of high-purity electrolytic manganese.

In accordance with the present invention, the principal step of purifying the electrolyte is accomplished by the utilization of a sulphide ion to effect precipitation of nickel, cobalt, copper and zinc, the substantial removal of these metals being apparently particularly essential if manganese deposits of good density and substantial freedom from sulphur are to be obtained. While these metals are effectively removed in accordance with the practice of my invention, other heavy metals are likewise at least substantially eliminated.

It has been found that when a sulphide ion is added, for example, to an aqueous solution of manganese sulphate containing traces of nickel and cobalt and having a hydrogen ion concentration greater than about 6.0, pink manganese sulphide and other heavy metal sulphides are essentially precipitated. If filtration to remove such precipitates is carried out under these conditions, it has been found that the filtrate will not be entirely free of nickel and cobalt. If, however, the solution is permitted to stand for a substantial period of time, at least one hour and preferably several hours in the usual case, the pink manganese sulphide undergoes a change and a black precipitate containing the nickel and cobalt is formed. On filtration, under such conditions, the solution is substantially free from nickel and cobalt.

While good results are obtained by following the procedure described hereinabove, so far as the initial purification step is concerned, it has been found that further improvements result from the addition to the electrolyte of a finely divided material such as infusorial earth, tripoli, activated charcoal, alumina, silica gel, barium sulphate, titanium dioxide, or any other inert material presenting a large surface. This surface may be produced in other ways, for example, as by forming a precipitate in the solution itself, for example, by adding barium sulphide thereto. Exceptionally satisfactory results are obtained by the use of activated charcoal and it is preferred, therefore, to employ this material. The activated charcoal or the like reduces materially the length of time that the precipitate of pink manganese sulphide and other heavy metal sulphides is required to be allowed to stand. Thus, for example, instead of requiring upwardly of an hour and in numerous cases several hours, the addition of activated charcoal or the like reduces the time of standing to only a few minutes, in most instances, to approximately 10 or 15 minutes.

In order to obtain highly pure deposits of electrolytic manganese of desired density, the anode current density should be below twenty amperes per square foot and, for best results, between about sixteen and about eighteen amperes per square foot. Furthermore, the manganese content during electrolysis should be about fifteen grams per liter. In order to accomplish this result, for example, electrolyte containing at least about twenty-five grams per liter of metallic manganese as manganese sulphate may be

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HALL Clerk

passed through the cathode compartment at such a rate that the solution leaving the cathode compartment contains of the order of ten grams of metallic manganese as manganese sulphate per liter. Separate anolyte and catholyte circuits are maintained and they may be separated by a relatively impermeable diaphragm if it is not desired to make large amounts of manganese dioxide at the anode.

The following example is illustrative of the practice of my invention. It will be understood that variations may be made with respect to the manganese salt to be electrolyzed, the character of the addition agent or agents, the nature of the cathodes and anodes, current densities and the like, as well as in other ways, all within the scope of the invention in the light of the guiding principles which have been described in detail hereinabove.

To 10,000 liters of an aqueous solution containing 150 grams of ammonium sulphate and 35 grams of metallic manganese as manganese sulphate per liter, said solution containing traces of nickel, iron and cobalt, one pound of colorless ammonium sulphide and one pound of activated charcoal were added. The solution was stirred and then allowed to stand for 15 minutes. The solution was then filtered through a high silicon iron filter press using an ordinary filter cloth. The resulting solution was free from nickel and cobalt as indicated by tests with dimethylglyoxime and alpha nitroso beta naphthol. It is particularly preferred that the pH of the solution be maintained between 7 and 8 although good results may be obtained employing a pH of about 5.5 and about 8.5. The resulting solution is then electrolyzed in a lead lined cell with a heavy canvas diaphragm, sheet steel cathodes and lead anodes, the anode current density utilized being approximately 18 amperes per square foot.

Instead of employing ammonium sulphide, other sulphides may be utilized, it being immaterial in what form the sulphide ion is added. Ammonium sulphide, hydrogen sulphide and barium sulphide are particularly preferred because they do not contaminate the solution. It will be understood that the final, purified solution which is to be electrolyzed, when prepared in accordance with the present invention, contains only the amount of sulphide ion represented by the solubility of manganese sulphide in the particular electrolyte utilized. In general, the sulphide ion is employed in amounts less than or not substantially in excess of, about 1% of the stoichiometric equivalent of the manganese present.

While the practice of the process may be carried out with solutions containing only manganese salts such as manganese sulphate, it is distinctly preferable to employ aqueous electrolytes containing not only manganese salts but also addition agents such as ammonium salts, for example, ammonium sulphate as well as salts of alkylolamines and related compounds. Where ammonium sulphate is utilized, together with manganese sulphate, there should be present at least about 100 grams of ammonium sulphate per liter of electrolyte solution in order to obtain the most satisfactory results.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. In a method of making high purity manganese which comprises electrolyzing an aqueous solution containing a soluble manganese salt, the steps which comprise adding to said aqueous solution a sulphide ion and an inert, solid material having a high specific surface, the sulphide ion being effective to precipitate such heavy metals as may be present, allowing the solution to stand for a short period of time, and filtering.

2. The method defined in claim 1 wherein the inert, solid material comprises activated charcoal.

3. The method defined in claim 1 wherein the inert, solid material is activated charcoal, the sulphide ion added is in an amount less than about 1% of the stoichiometric equivalent of the manganese present, the activated charcoal being employed in amounts at least equal to the weight of the added sulphide ion.

4. In a process of producing electrolytic manganese which comprises electrolyzing an aqueous solution of manganese sulphate, the steps which comprise adding a member selected from the group consisting of ammonium sulphide, hydrogen sulphide, and barium sulphide to said aqueous solution to precipitate such heavy metals as may be present, adding a finely divided inert material to the solution, allowing the solution to stand for at least about 10 minutes, and then filtering the solution.

5. The process defined in claim 4 wherein the aqueous solution of manganese sulphate contains a substantial content of ammonium sulphate.

6. In a method of producing electrolytic manganese of high purity which comprises electrolyzing an aqueous solution containing at least 15 grams of manganese as manganese sulphate and at least 100 grams of ammonium sulphate per liter of solution by utilizing an insoluble anode and an anode current density between about 16 and about 20 ampers per square foot, adding ammonium sulphide to said aqueous solution in amounts not substantially in excess of 1% of the stoichiometric equivalent of the manganese present, adding a finely divided inert material to the solution, allowing the solution to stand for at least several minutes, and filtering.

7. In a process of producing electrolytic manganese by electrolysis of aqueous solutions of manganese sulphate containing substantial proportions of ammonium sulphate, the steps which comprise adding a sulphide ion to said solutions at a pH between about 7.0 and 8.0, adding activated charcoal, allowing the solution to stand for an appreciable period of time, and filtering to remove the precipitated sulphides of such heavy metal impurities which may be present.

8. The method of claim 7 wherein the sulphide ion is incorporated through the addition of a member selected from the group consisting of hydrogen sulphide, ammonium sulphide, and barium sulphide.

9. The method of claim 7 wherein the sulphide ion is incorporated through the medium of ammonium sulphide and the filtrate is electrolyzed utilizing an insoluble anode and an anode current density between about 16 amperes and about 20 amperes per square foot, the electrolysis being effected in a diaphragm cell and the manganese electrolyte being continuously circulated through the cathode compartment at such a rate that there is always present therein at least about 15 grams of manganese as manganese sulphate per liter.

PAUL M. AMBROSE.

163 Filed Sep 7 1948

Cancelled Claims 1, 4 and 9 in Original Ambrose Application

1. In a method of making high purity manganese which comprises electrolyzing an aqueous solution of a soluble manganese salt, the steps which comprise adding a sulphide ion to said aqueous solution to effect precipitation of heavy metal salts which may be present, allowing the solution to stand for a substantial period of time, and filtering.

* * * * * * * * * *

4. The method of Claim 1 wherein the sulphide ion is added in an amount not substantially in excess of 1% of the stoichiometric equivalent of the manganese present.

* * * * * * * * * *

164 9. In a method of producing electrolytic manganese by electrolysis of manganese sulphate solutions containing a substantial proportion of ammonium sulphate, the pH of said solution falling between 5.5 and 8.5, the steps which comprise adding thereto a sulphide ion whereby pink manganese sulphide and other heavy metal sulphides are essentially precipitated, allowing the solution to
165 stand for an appreciable period of time, and filtering to effect removal of the sulphides of the heavy metals which are present as impurities.

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Filed Sep 7 1948

Page 1 of Amendment

Mail Division May 31 1941 U. S. Patent Office

UNITED STATES PATENT OFFICE

Applicant: Paul M. Ambrose Div. 56, Room 4725
Application: ELECTROLYTIC DEPOSITION OF MANGANESE
Serial No. 276,554 Filed May 31, 1939

757 Field Building
Chicago, Illinois
May 29, 1941

Hon. Commissioner of Patents
Washington, D. C.

Sir:

In the above entitled application, responsive to the Official Action of December 18, 1940, kindly amend as follows:

Kindly cancel Claims 1, 4 and 9.

REMARKS

Claims 1, 4 and 9 have been deleted and reconsideration is again and respectfully requested of the rejection of the other claims, for the reasons set out hereinbelow, since it is believed clear that there is no proper basis for the rejection thereof.

Reconsideration is respectfully requested of the rejection of claims 2, 3, 5-8, inclusive, 10, 11 and 12 as being unduly broad and based upon an inadequate and insufficient specification.

The Examiner is basing his position essentially around the contention that, under certain conditions of pH or acidity, nickel sulphide will not be precipitated by certain of the

BRIEF FOR APPELLEE

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 10018

PAUL M. AMBROSE AND CRIMORA RESEARCH AND
DEVELOPMENT CORPORATION, APPELLANTS

John A Marzall v.

~~LAWRENCE C. KINGSLAND,~~ COMMISSIONER OF PATENTS,
APPELLEE

APPEAL FROM THE JUDGMENT OF THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

W. W. COCHRAN,
Solicitor, United States Patent Office,
Attorney for Appellee.

J. SCHIMMEL,
Of Counsel.

United States Court of Appeals
for the District of Columbia
Circuit
FILED DEC 21 1948
Joseph W. Stewart
CLERK

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816875—43

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 10018

PAUL M. AMBROSE AND CRIMORA RESEARCH AND
DEVELOPMENT CORPORATION, APPELLANTS

v.

LAWRENCE C. KINGSLAND, COMMISSIONER OF PATENTS,
APPELLEE

*APPEAL FROM THE JUDGMENT OF THE UNITED STATES
DISTRICT COURT FOR THE DISTRICT OF COLUMBIA*

BRIEF FOR THE COMMISSIONER OF PATENTS

INTRODUCTION

This is an appeal from the judgment (App. 10) of the United States District Court for the District of Columbia, dated June 21, 1948, dismissing appellant's complaint (App. 2–5) against the Commissioner of Patents in an action under Section 4915 R. S. (U. S. C., title 35, sec. 63), Civil Action No. 1325–47, in which appellant sought to have the District Court authorize the Commissioner to grant a reissue patent containing certain claims, numbered 19, 20 and 21 (App. 3) of the Ambrose application, Serial No.

568,310 (App. 30) for the reissue of Ambrose patent No. 2,347,451 (App. 55, 56), entitled "Electrolytic Deposition of Manganese."

APPELLANTS' INVENTION

The application at bar describes a process of producing a high purity solution of a manganese salt, from which pure manganese metal is precipitated electrolytically. As set out in Finding of Fact No. 3 (App. 9) and as indicated in appellants' brief (Br. 3), the essence of the process is the addition of a small amount of material providing a sulphide ion, not in excess of 1 percent of the stoichiometric equivalent of the manganese present, to a solution containing manganese sulfate and ammonium sulfate maintained at a pH within the range between 5.5 and 8.5 and containing only traces of nickel and cobalt, and permitting the treated solution to stand long enough for the pink precipitate first formed to be changed to a black precipitate.

Finding of Fact No. 4 (App. 9) states that the description of appellants' invention in the reissue application at bar is identical with that of the Ambrose patent No. 2,347,451 (App. 55).

THE CLAIMS

The appealed claims are all in the method form, and of them, claim 19 is considered illustrative by the parties (Br. 3). Since there is no contention that any one of the claims has any limitation which differentiates it patentably from any other claim, all the claims stand or fall together, so that there is no necessity for separate analysis of the claims. The claims appear on page 3 of the joint appendix.

No prior art patents or publications are relied upon for refusing the claims in the reissue application at bar. Estoppel is the sole basis for denying the reissue patent.

SUMMARY OF ARGUMENT

As set forth in Finding of Fact No. 5 (App. 9) the record shows that during the prosecution of the application which resulted in the Ambrose Patent No. 2,347,451, the reissue of which is sought in the application at bar, appellants cancelled two claims (4 and 9) after their rejection by the examiner. Accordingly, it is submitted the issues are:

(1) that abandoned claims 4 and 9 (App. 57), taken together, contained substantially the same subject matter as that sought in claims 19, 20, and 21 at bar (Finding of Fact No. 6, App. 9); and

(2) that the abandonment of claims 4 and 9 in the original application, which claims taken together contained substantially the same subject matter as that sought in claims 19, 20, and 21 at bar, is conclusive that there was no inadvertence, accident or mistake within the meaning of Section 4916 R. S. (Finding of Fact No. 7, App. 9, 10.)

ARGUMENT

1. The first issue

Whether abandoned claims 4 and 9 of the original Ambrose application, taken together, contained substantially the same subject matter as that sought in claims 19, 20, and 21 at bar is a matter of fact. The trial court held that the abandoned claims did contain substantially the same subject matter as the claims at bar (Finding of Fact No. 6, App. 9), and this court will not disturb such findings of fact on appeal unless upon an examination of the evidence the trial court was clearly wrong. *Abbott* v. *Coe,* 71 App. D. C. 195, 109 F. (2d) 449; *Daniels* v. *Coe,* 73 App. D. C. 54, 116 F. (2d) 941; *General Motors Corp.* v. *Coe,* 74 App. D. C. 189, 120 F. (2d) 736. In other words, in suits to obtain a patent doubts, if present, are to be resolved in favor of the correctness of the administrative and judicial action.

Accordingly, if claim 19 at bar (App. 3) be compared with cancelled claim 9 (App. 57) it is submitted that the only real difference between the two is that cancelled claim 9 does not contain the limitation of claim 19 at bar with respect to the amount of sulfide ion used. However, that limitation does appear in cancelled claim 4 (App. 57) in exactly the same language as in claim 19 at bar, so that the real question at issue is whether the language of claim 9 itself imports essentially the same concept or idea as is defined by the phraseology of claim 19 at bar, or in other words, whether claim 19 at bar is in other respects patentably distinguished from cancelled claim 9.

It is true, as appellants contend (Br. 10), that cancelled claim 9 lacks any specification of the nature and amount of the heavy metals present in the solution to be purified. However, in view of the fact that the reissue application at bar contains the same description of the invention as that which formed the basis for the original grant (Finding of Fact No. 4, App. 9), and in view of the fact that appellants' expert, Dr. Dean, admitted that, prior to the Ambrose invention, methods for the removal of large amounts of nickel and cobalt were known to the art and that these methods were satisfactory (App. 27, 28), it is submitted that one skilled in the art reading cancelled claim 9 and the specification upon which it was based would know that the method was to be utilized only when the manganese solution to be purified contained small quantities of metal impurities considered detrimental to electrolytic manganese production. That this would be the fact was admitted by Dr. Dean upon cross-examination (App. 28). Moreover, this would necessarily be so, because there is no indication in the Ambrose specification that the described purification treatment is to replace those known to the art when dealing with a large amount of metal impurities. Therefore, the conclusion appears inescapable that the described treatment is only of value for solutions containing small amounts or traces of such impurities. Since nickel and cobalt are commonly associated with manganese as impurities, and since the patent specification speaks of such metals as among the impurities to be removed (App. 55, col. 1, lines 50–55), it is submitted that the limitation in claim 19 at bar to solutions containing "traces of nickel and cobalt" does not distinguish in fact or patentably from the limitation to "heavy metals" appearing in cancelled claim 9.

Likewise, notwithstanding the fact that cancelled claim 9 does not contain the exact language of claim

19 at bar relative to the standing time after the sulfide ion is introduced, it is submitted that the cancelled claim contains sufficient information concerning this limitation to permit one skilled in the art to carry out the process and achieve satisfactory results. Appellants' contention is that cancelled claim 9 lacks any criterion by which the standing time can be determined (Br. 10, 12). However, cancelled claim 9 specifically provided for "allowing the solution to stand for an appreciable period of time" before filtering. Although, appellants' expert, Dr. Dean, stated that the term "appreciable" in the cancelled claim was indefinite while "substantial" in the claim at bar was not (App. 28), it is significant that he admitted that he would resort to the specification of the patent to interpret that term (App. 29). Regardless of whether there is in fact any difference between the two terms, it is contended that one skilled in the art, reading the description in the patent, would of necessity allow the solution to stand a sufficient length of time to permit the pink color first produced to change to the black before filtering. Those are the directions set forth in the patent, and the application of common sense to the problem would require a period of time requisite for the color change to take place. Whether that period be called appreciable or substantial is of no patentable significance.

Accordingly, it is submitted that cancelled claims 4 and 9, taken together, contain substantially the same subject matter as that of claim 19 at bar, and that such claims set forth the process in sufficient completeness and definiteness to permit one skilled in the art to carry it out and achieve the desired result.

2. The second issue

The second issue involved in this appeal is essentially one of law, namely, the extent and scope of the doctrine of estoppel as applied to reissues. Specifically, the question is whether in applying such doctrine it is permissible to combine the limitations of two claims cancelled from the original application in order to raise the bar of estoppel? The trial court held that it is of no importance that the subject matter abandoned was presented in more than one claim (App. 8).

Estoppel in reissue applications or patents is settled doctrine in patent law. It stems from the limitation in the statute, Section 4915 R. S. (U. S. C., title 35, sec. 63), that such patents may be granted only when error in the patent grant has arisen by inadvertence, accident or mistake. *Liggett* v. *Avery,* 101 U. S. 256; *In re White,* 57 App. D. C. 355.

Although appellants contend that the rule of estoppel does not apply in this case because no single cancelled claim contains all the limitations of the claims sought in the reissue, it is noted that they admit that they have been unable to find any clear-cut case on this point (Br. 13).

It is submitted that the rule of estoppel as applied in reissues concerns the subject matter cancelled or abandoned in the original application, not the form in which the subject matter appears. This would seem to be inherent in the statement appearing in *Liggett* v. *Avery, supra,* that:

> It is extremely doubtful whether reissued letters can be sustained in any case where they contain claims that have once been formally disclaimed by the patentee, or rejected with his acquiescence, and he has consented to such rejection in order to obtain his letters patent.

It is also essential to the decision of this court in *Denton* v. *Commissioner of Patents,* 12 App. D. C. 504, to the decision of the United States Customs and Patent Appeals in *In re Gustavino,* 23 C. C. P. A. 1179, 83 F. (2d) 913, and to the decision of the Court of Appeals for the Seventh Circuit in *Fiberjoint Corp.* v. *W. R. Meadows Inc.,* 112 F. (2d) 322.

In *Denton* v. *Commissioner of Patents,* a comparison of the claims sought in the reissue is made by the court with *two* claims originally presented and cancelled to secure the original patent. Each of the cancelled claims was broader than the claim sought in the reissue, just as here, each of cancelled claims 4 and 9 is broader than claim 19 at bar. It is submitted that in order to meet each and every limitation of the claim sought in the reissue it was necessary for the court to add the limitations of the two cancelled claims, for in refusing the reissue claim, the court said:

> The only question for us is whether the claim now put forward * * * was so far contained in his original claims that were aban-

> doned by him as to be itself thereby necessarily abandoned, and this we must answer in the affirmative, for the abandonment of the whole necessarily implies and involves the abandonment of all the parts except such as are expressly and specifically retained.

It is believed to be significant that the court spoke of the original *claims,* and that the original *claims* compared with *the claim* put forward in the reissue application contained the *whole* of the abandoned subject matter. In the light of the facts of that case, the emphasis is considered to be deliberate, not accidental. Clearly this case supports the contention that it is the subject matter cancelled or abandoned that is looked to in raising the bar of estoppel, and that in doing so in this case more than a single cancelled claim was used.

Also, in *In re Gustavino, supra,* the United States Court of Customs and Patent Appeals clearly compared *two* cancelled claims with a single claim sought in the reissue application. On page 1183 of Vol. 23 of the patent reports of that Court the claim (numbered 6) sought in the reissue application is set forth together with the *two* claims (numbered 7 and 10) cancelled from the original application. The limitations which were urged as distinguishing the reissue claim from any one of the cancelled claims appear in italics. The decision of the Court states:

> When appealed claim 6 and the other appealed claims are compared with cancelled

> claims 7 and 10, and the language of each claim carefully studied, we think no differences of a material nature appear. Under any fair construction of the cancelled claims, it seems clear to us that every limitation in the appealed claims is inherent in and is expressed, although in slightly different phraseology, in the cancelled claims.

Here a visual inspection of the claim set forth in the decision shows definitely and clearly that neither one of the cancelled claims was a duplicate of the claim sought in the reissue. Some of the limitations of the reissue claim appear in one of the cancelled claims, and others in the second cancelled claim. Hence it is believed to be self-evident that the court must have added together the limitations of the two cancelled claims in order to arrive at the conclusion that "every limitation in the appealed claims * * * is expressed * * * in the cancelled claims," and that the appellant in that case was estopped to receive the claims sought in a reissue application.

Further, the same rule of law was applied by the Seventh Circuit Court of Appeals in *Fiberjoint Corp. v. W. R. Meadows, Inc., supra.* In that case the court sustained the contention that the appellees could not recapture the cancelled claims or their substance by a reissue, by holding two claims of a reissue patent (claims 7 and 8) invalid because they contained nothing which was not fully set forth in three cancelled claims of the original application (claims 5, 6 and substituted claim 5).

Moreover, even assuming that cancelled claims 4 and 9 do not contain all the limitations of claim 19 at bar, it is submitted that the essential dominant thought or characteristic of these abandoned claims is the same as that of the claims sought by reissue. Under such circumstances, a valid reissue cannot be granted, as held by the Circuit Court of Appeals for the Sixth Circuit in *G. H. Rim Co.* v. *Firestone Steel Products Co.,* 29 F. (2d) 825. It is of particular significance that in that case the reissue claim contained numerous limitations not found expressly set forth in the abandoned claims, but, nevertheless, the Court held that such limitations were implied or of insufficient importance to affect the result. The mere fact that the reissue claims contain limitations not in the abandoned claims is not necessarily a reason for allowing such claims. The nature of the differences must be considered, and if they are only minor or non-inventive variations, no warrant exists for the allowance of the claim.

CONCLUSION

It is respectfully submitted that the claims at bar are directed to the same essential invention as that defined in cancelled claims 4 and 9 of the original Ambrose application, and that the cancellation of such claims estops applicants from obtaining claims to essentially the same subject matter in a reissue application. Further, it is submitted that even if it be held that the claims at bar contain limitations not expressed in the cancelled claims, such limitations are inherent in the subject matter of those claims, or noninventively distinct therefrom, and therefore not allowable in a reissue application. The decision appealed from should be affirmed.

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